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PROCEEDINGS OF
COLUMBUS

OF THE

Columbus Horticultural Society

FOR

1886.

VOLUME I.

W. S. DEVOL, Secretary.

“This is an Art
Which does mend Nature : change it rather ; but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

COLUMBUS:
PUBLISHED BY THE SOCIETY.
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GEO. W. SINKS,	TREASURER.

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W. J. GREEN.	

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BOTANY,	N. S. TOWNSHEND.
ENTOMOLOGY,	WM. R. LAZENBY.
METEOROLOGY,	W. S. DEVOL.
LIBRARY,	J. J. JANNEY.
FRUITS,	W. J. GREEN.
PLANTS AND FLOWERS,	J. R. HELLENTHAL.
SYNONYMS,	W. J. GREEN.

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GEO. C. KRAUSS,	MRS. MARY L. WASSON,
MRS. ELIZA B. KIMBALL,	MISS JEANNETTE WASSON.
MRS. N. E. LOVEJOY,	

A2—Annual Meeting, December 4, 1886—end of Volume.

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C. Y. Hunt

COLUMBUS HORTICULTURAL SOCIETY.

Proceedings for 1886.

CONSTITUTION.

NAME AND OBJECT.

SECTION 1. This Society shall be known as the COLUMBUS HORTICULTURAL SOCIETY.

SEC. 2. The object for which it is organized is the advancement of horticultural knowledge.

MEMBERSHIP.

SEC. 3. Any person may become a member of the Society by the payment of one dollar. Wives and daughters of members shall be members without the payment of any fee. Male members shall pay an annual fee of fifty cents, in advance, which shall be for the year ending with the next succeeding annual meeting; and no member shall have the right to vote, or other privilege of membership of the Society so long as such annual fee shall remain unpaid. Any lady resident in Franklin county may become a member without any fee.

SEC. 4. Any person may become a life member of the Society by paying twenty dollars, which shall be in lieu of all assessments or annual dues; and all persons who have been members twenty years or more, who have paid, or shall pay, their regular dues, shall be life members.

SEC. 5. Any person distinguished in horticulture, upon the recommendation of the Executive Committee, may be elected an honorary member of the Society by the affirmative vote of two-thirds of the members present at any regular meeting. Honorary members shall not have the right to vote nor incur any of the liabilities of members, but they shall be admitted to all meetings and exhibitions of the Society.

OFFICERS.

SEC. 6. The officers of the Society shall be a President, Vice President, Secretary, Treasurer, and an Executive Committee of three members, all of whom shall be elected by ballot at every annual meeting on the first Saturday in December, and shall serve until their successors are elected.

SEC. 7. The President, or, in his absence, the Vice President, shall preside at all meetings of the Society and the Executive Committee. In the absence of both, a President *pro tem.* shall be appointed.

SEC. 8. The Secretary shall keep a record of the proceedings of the Society, and attend to all necessary correspondence. He shall also receive all money due the Society, and pay over the same to the Treasurer; and shall receive as remuneration for his services the sum of one dollar and fifty cents for each and every meeting at which he may serve.

SEC. 9. The Treasurer shall receive from the Secretary all the money and funds belonging to the Society, and shall be the custodian of all bonds, stocks and securities belonging to the Society, and shall pay out and transfer

the same only on the order of the Society, certified by the President and Secretary; and he shall keep an account of the receipts and disbursements, and report it to the annual meeting; and shall give such bonds as the Executive Committee may require.

SEC. 10. The Executive Committee shall have control of all exhibitions, and have a general supervision of all matters pertaining to the welfare of the Society. It shall have power to call special meetings whenever, in its judgment, it shall be necessary.

SEC. 11. The chairmen of the standing committees shall be elected at the annual meeting, and such chairmen shall have the power to appoint the other members of their respective committees.

SEC. 12. The following standing committees shall be elected:

- | | |
|--------------------|---------------------------|
| 1. On Botany. | 5. On Fruits. |
| 2. On Entomology. | 6. On Plants and Flowers. |
| 3. On Meteorology. | 7. On Vegetables. |
| 4. On Library. | 8. Synonyms. |

INVESTMENTS.

SEC. 13. The Executive Committee shall make and manage all investments. No investment shall ever be changed without the recommendation of said committee, approved by two-thirds each of the members and life members of the Society; nor shall the present invested fund of the Society ever be reduced in amount; but if it should become so by any unavoidable cause, the income shall be invested until the full amount is restored.

AMENDMENTS.

SEC. 14. This Constitution may be amended at any regular meeting of the Society: Provided, such proposed amendment shall have been submitted, in writing, at least one week before such meeting.

BY-LAWS.

ORDER OF BUSINESS.

SECTION 1. The following shall be the order of business at every meeting, unless changed at the time by vote of the meeting:

1. Reading the minutes of the preceding meeting.
2. Unfinished business.
3. Election of members.
4. Reports of special committees.
5. Reports of standing committees.
6. Communications and correspondence.
7. Regular paper or address and discussion.
8. Miscellaneous business.
9. Adjournment.

TIME OF MEETING.

SEC. 2. Regular meetings shall be held on the last Saturday of each month, at 2½ o'clock P. M.

Columbus Horticultural Society.

BOARD OF TRADE ROOM, }
SATURDAY, Dec. 5, 1885.

The Society met, and was called to order at 2:30 P. M., by the President.

The minutes of the preceding meeting were read and approved.

Mr. Aldrich proposed J. W. Horton, John L. Gordon, jr., Mrs. Laura Lawson, Mrs. Mary L. Wasson and Miss Jeannette Wasson as members of the Society, who were each duly elected. Prest. Westwater proposed Geo. M. Peters as a member, and he was duly elected. Mr. Janney proposed J. R. Hellen-thal as a member, and he was duly elected.

Mr. Devol, committee on Botany, read the following

ANNUAL REPORT.

Quite a large number of plants not found catalogued in the published floras of Ohio have been observed in various localities. Some of these are introduced species, others are indigenous, but have heretofore been overlooked. None of them, I think, are of any economic value, although some may prove to be serious weedy pests. It may be of interest to the Society to note that one of these new species, *Potentilla recta*, Willd. was first observed by Professor Lazenby on that part of the University campus occupied by the arboretum begun by the Columbus Horticultural Society.

There seems to be an increasing interest throughout the State in the subject of botany, and I have received numerous letters of inquiry concerning the character, habits, etc., of native and introduced species of plants, and especially their importance, economically considered. Over 250 specimens of plants have been received for naming at the experiment station since last March.

The additions to botanical literature have not been particularly large or important. The most valuable addition in the English language is the second part (in order of publication) of Gray's Synoptical Flora. Other publications are: Plant Life on the Farm, by M. F. Masters; Flowers of the Field and Forest, by Sprague and Hervey; Mushrooms of America, by J. A. Palmer, jr. Several

journals of more or less botanical interest have been started. The Journal of Mycology, edited by W. A. Kellerman and published monthly at Manhattan, Kas., is devoted exclusively to mycological botany. The initial number was issued in January, 1885. The American Florist, published semi-monthly at Chicago and New York, made its appearance last August. The Michigan Horticulturist, a monthly published at Detroit and edited by Charles W. Garfield, appeared in September; Popular Gardening also a monthly, the first number dated at Buffalo and New York, October, 1885.

J. C. Arthur of the New York experiment station published an important pamphlet on pear blight, setting forth the experiments and results of inoculation of the blight on various trees during the season of 1884. It consisted practically in a repetition of the experiments made by T. J. Burrill a few years ago, and the same conclusions reached. Perhaps the investigations in Europe of the subject of bacteria should come under the head of botanical research, but as they have not dealt with the botanical aspect I will not speak further regarding them. Much valuable, thorough work is being done in various branches of botanical science, but in no branch can we say that the work is completed. Much remains to be done.

Mrs. Lovejoy and Pres't. Westwater, from the committee on meeting of the State Horticultural Society, presented sundry bills amounting to \$231.99, which were ordered paid. The Secretary presented a bill in favor of the Ohio State Journal Co. for \$2.50, and a bill in his own favor for four day's service as Secretary, \$6.00, which were ordered paid.

On motion of G. S. Innis, the Society proceeded to the election of officers for the ensuing year.

Upon balloting, the following were declared to be elected:

President—J. M. Westwater;
Vice-President—O. W. Aldrich;

Secretary—W. S. Devol;

Treasurer—Geo. W. Sinks;

Executive Committee—G. S. Innis, Wm. R. Lazenby, W. J. Green.

PROCEEDINGS OF THE COLUMBUS HORTICULTURAL SOCIETY.

CHAIRMAN STANDING COMMITTEES

Botany—N. S. Townshend ;
Entomology—Wm. R. Lazenby ;
Meteorology—W. S. Devol ;
Library—J. J. Janney ;
Fruits—W. J. Green ;
Plants and Flowers—J. R. Hellenthal ;
Vegetables—H. M. Innis ;
Synonyms—W. J. Green.

The Secretary reported membership fees received, \$2.00.

On motion of Mr. Devol, the chairmen of every committee were requested to make a report for the year.

On motion of Mr. Innis the thanks of the Society were tendered to Mrs. Lovejoy and the ladies who assisted her, for their successful management of the reception of the State Horticultural Society.

On motion of Mr. Lazenby, the Society adjourned.

J. J. JANNEY, *Secretary*.



Columbus Horticultural Society.

BOARD OF TRADE ROOMS, }
COLUMBUS, O., Dec. 26, 1886. }

The Society met at 3 P. M. The Secretary being absent, on motion of G. S. Innis, Mr. Janney was elected Secretary *pro tem*.

The minutes of the last meeting were read, and after amendment approved.

Mr. Aldrich presented the name of I. E. Jones, of Clintonville, and Mr. Green that of W. B. Alwood for membership, who were each elected members of the Society.

Mr. G. S. Innis, from the committee on fruits for last year, and Mr. Janney, from the committee on library, asked further time to make their annual reports, which was granted.

Mr. Green, chairman of the committee, made the following

REPORT ON FRUITS.

The season of 1885 was unusually favorable for strawberries, raspberries, gooseberries and currants, and the crop was very good. Blackberry plants were quite generally killed last winter, hence the crop was light. Grapevines were also injured to some extent. Owing to that fact and the rot there were few good grapes in this vicinity. It should be stated, however, that comparatively few vines are planted in this vicinity. Nearly all the vineyards that have been planted have been abandoned as unprofitable. Private growers continue to plant to some extent, and occasionally we hear of vines bearing a good crop, but it may be said that the outlook for grape culture in this vicinity is not encouraging, commercially, at least. Amateurs may find some satisfaction in overcoming the difficulties in their way, but they must not complain if the few grapes that they succeed in growing cost double the market price.

Blackberry plantations have been abandoned for the same reason, although not many were ever set in this vicinity. Wild ones are plentiful and cheap, but all the cultivated ones found in the market are brought from some more favorable section.

It has been found that strawberries and raspberries can be grown with some degree of success, and this branch of the fruit business is quite flourishing at present. Considerable advancement has been made during the last year. Nearly all growers have extended their business while many others have ventured to plant small areas. Columbus people are likely to get a taste of home

grown berries in the near future. Doubtless many of them supposed that the honest huckster dealt only in the products of the neighboring fields, but the fact is that more than half our supply of berries has been brought from other sections. By the time berries have been roughly handled by express agents and commission men, and shoveled over by hucksters, consumers find that the small measure which they get dwindles down to almost nothing by the time the half rotten mass is sorted over. Home grown berries are no better in the beginning than others, but they are vastly better when the consumer gets them; hence it ought to be a matter of interest to city people that the growers round about are making efforts to supply them with good fresh berries. The thing for consumers to do is to discriminate as to quality. Insist upon having good, ripe, fresh fruit, and they may depend upon it that some one will supply them.

Unripe, half-rotten fruit is something that no one can afford to use under any circumstances. It is dangerous to the health and unprofitable to the pocket. Decaying berries ought to be dumped as unceremoniously as tainted meat. If the authorities will not attend to the matter, consumers have the choice of buying or not, as they please. If they will insist upon having something good it will be forthcoming. It is perhaps useless to address those whose greatest efforts are directed to beating down prices to the lowest possible notch—even below living rates. Such people insist upon cheapness first and quality afterward. If a person is determined to buy cheaply he can nearly always do so; he can even buy at starvation prices. We growl at monopolies, but the worst possible form of monopoly is the everlasting cry for cheap things. The common people, who do not know the value of articles and who insist upon buying goods at, or below cost are the monopolists. They surely are so far as the fruit trade is concerned. The person with only five cents to spend for fruit, who yields to the allurements of three quarts or four quarts of stale berries for a quarter, and passes by the fresh fruit because it costs a little more, is for the time being one of the great army of monopolists who, to use a slang phrase, "knock the bottom out of business." No one is to blame for wishing to buy an article for what it is worth. A person ought not to pay a high price for berries when they

are cheap; but the consumer who does not discriminate as to quality and is not willing to pay accordingly does an injury to himself, to the grower and to the general public.

Members of the Society ought to take a stand in favor of good fruit in order to encourage producers to better serve the public.

Mr. Janney said that he had planted a Concord vine in 1861, which commenced bearing the third year thereafter, and had borne a fair crop ever since, furnishing a small family with all they could use. He would urge every person owning a lot to plant a vine.

Prof. Lazenby, chairman of the Committee on Entomology, asked further time for his report, which was granted.

Mr. Aldrich, chosen by Mr. Green as his associate on Committee on Fruits reported as follows:

Mr. President, and Members of the Society:— In the part of the county in which I reside there are but few fruit growers, and but few of the farmers grow small fruits sufficient for their own use; but I think in my own neighborhood there is a growing interest in the matter, and I have myself furnished plants to four or five persons who wish to grow strawberries for their own use.

Strawberries set out in the Spring have made a very vigorous growth, so much so that plantations of the more vigorous growing kinds, when cultivation was suspended at the usual season, formed nearly enough runners to cover the whole ground so thickly that unless thinned very much in the spring the berries must be of small size. The season was very favorable for transplanting, and a much greater proportion of plants set at that time have lived than usual. Of seventeen varieties set at that time, I noticed a great difference in the growth before the ground froze up. Sucker State, Parry, Sharpless, Norman, Crescent and Jersey Queen, all made a fine growth and made fine, stalky plants before the ground froze. Windsor Chief made a good growth. Cumberland, Mt. Vernon, Bidwell, Wilson and Hart's Minnesota made a fair growth. Kentucky seemed no larger than when set out. Old Iron Clad, Piper's Seedling, and Miner's, all disappointed me in their growth, as they had the reputation of very vigorous growers.

The ground was made very rich. Though but few died, the growth of the last named varieties, and of Cornelia as well, indicates that they are not varieties which make much of a growth in the fall, and should therefore be set in the spring.

Red raspberries seem to have made a very

fair growth, as have new plantations of black caps, when the tips of the canes were not injured by the severe winter; but old plantations of black caps have made a very poor growth for so favorable a season.

I can only account for this by the fact that the severe cold of last winter severely injured the vines, but the favorable spring enabled them to set and fairly mature the fruit; but that there was not sufficient vitality left to make a good growth for next year's fruiting. I notice, also, that many of the tips rotted and failed to root.

There are few blackberries raised in my neighborhood, there being many wild bushes; but for the last two seasons they have borne no fruit. I have a small patch of Lawton and Kittatiny which withstood the winter and bore a few berries and made a fair growth.

I have, this fall, set out a trial plantation of forty-four varieties of raspberries and thirty of blackberries. I set them in the fall for the purpose of seeing whether vines planted at that time will do as well as when set in the spring. The ground is clay loam with a mixture of black soil, and well underdrained, and the plants are well covered with coarse litter.

I shall await with interest their actions in the spring, and will report progress.

Prof. Lazenby said that he had never seen berries in better condition, especially the spring planted, which he thought better than fall.

Mr. Green—I am surprised that so many plant in the fall, when it is so clear that spring planting is better.

Mr. Aldrich—I suggest that some one prepare a paper on the raspberry and blackberry, giving their history, culture, hybridization, etc.

Prof. Lazenby—Prof. Wm. Saunders, of Ontario, has successfully hybridized the red and black raspberry, and the raspberry and blackberry.

The Secretary *pro tem.* presented a bill in favor of the Ohio State Journal Co. for two dollars, which was ordered paid.

Mr. Green—Would it not be well for the Society to appropriate a small sum of money for new varieties for the members who wish to experiment in the cultivation of fruits, flowers and vegetables?

On motion, the matter was referred to a select committee, consisting of the chairmen of the several standing committees.

On motion, the Society adjourned.

J. J. JANNEY,
Secretary pro tem.

Columbus horticultural Society.

BOARD OF TRADE ROOM, }
SATURDAY, Jan. 30th, 1886. }

The Society was called to order by the President.

The Secretary being absent, Mr. Janney was appointed Secretary *pro tem*.

The minutes of the last meeting were read and approved.

Mr. Wilson, from the Bureau of Forestry, reported that they had had a meeting, but had taken only preparatory steps.

Mr. Janney read a notice of a meeting of the Hennepin County Horticultural Society,

of Minnesota, at Minneapolis, which showed that the market gardeners of that section are active members of the Society.

Mr. Wilson moved that Mr. Green be requested to prepare for the next meeting, a paper on the first three varieties of potatoes, and their cultivation.

Mr. Green was requested to ascertain upon what terms fruits and plants can be procured for distribution among the members for experimentation, and report at the next meeting.

On motion of Mr. Janney, the Society adjourned.

J. J. JANNEY, *Secretary pro tem*.



Columbus horticultural Society.

BOARD OF TRADE ROOM, }
COLUMBUS, O., Feb. 27, 1886. }

The Society met at 3 o'clock, with the President in the chair.

The names of the following men were proposed for membership, who were thereupon duly elected: Wilber Brotherton, Clintonville, O.; Rev. W. R. Parsons, Worthington, O., and Symmes E. Brown, Columbus, O.

Professor William R. Lazenby then read the following paper on

EXPERIMENTS WITH INSECTICIDES.

There can be but little doubt that our insect enemies are on the increase, and if we do not fight them more effectively they are in a fair way to conquer us. We do not realize the danger that threatens, because we are apt to measure its magnitude by the size of our enemies. If it were true that the number of injurious insects were as insignificant as their size this indifference might be justified. This, however, is not the case. Insects come in countless millions. They appear to have established an almost universal empire in the earth and all things thereon. We find them not alone in our fields, orchards and gardens, but in our dwelling-houses, in our food, our clothing, our books. In fact, there are few material things that entirely escape the ravages of some one or more insect destroyers. Ice is frequently injured by them.

The destruction of these paltry foes means work. We can not destroy them by an edict, or suppress their ravages by any legislative action. It can only be done by an earnest, united effort on the part of all who are troubled by their ravages.

The first question that we must consider in this warfare is, what constitutes a practical remedy? The essential requisites may be summed up as follows:

1. It must be effectual; that is, it must either kill or repel the insects against which it is used.

2. It must be harmless to the plants to which it is applied, and to those that use the plants or any part of them. If the crop that is to be saved from the insects is poisoned so as to make it unfit for consumption, the purpose is in one sense defeated. All danger of poisoning the crops should be avoided.

3. It must be of moderate cost. This must

not be overlooked. A remedy may be ever so effectual and quite harmless to the plants, and to those who use them, but the cost so great as to make it practically useless. It must be so cheap that when added to the other necessary expenses of the crop the cost of production will be less than the price at which it can be sold in the market.

4. It must be of easy application. The cost of applying the remedy after it is procured is of prime importance. This may be illustrated by citing the example of a remedy for the potato beetle advertised in the papers when the beetle first made its appearance here. It answered the first three requirements—it was warranted to be effectual, would not injure the plants nor those using them as food, and was very cheap, as it would be sent by mail for 25 cents. Those who sent 25 cents received by mail two small wooden blocks, upon one of which was printed the directions: "Catch the beetle, place it upon this block and crush it with the other block."

Any remedy that will stand the test of the above requirements may be commended and used with equal safety and profit. There is almost no end to the remedies that have been recommended. A good many of these are useless, and others worse than useless. Insects have never been destroyed by magic, and seldom by any patent nostrum. Most of the so-called insect exterminators are humbugs. Any remedy that does not answer the requisites named above is scarcely worthy of consideration.

Insect remedies may be divided into two classes: First, preventive measures, or those that repel or drive away the enemy; Second, remedial measures, or those whose aim it is to kill the insect.

- I. The following are among the most important preventive measures that can be employed:

1. Increasing the vigor of plants, thereby enabling them to resist insect attacks. I can not too strenuously urge the importance of this. The weak, sickly plants are almost without exception the first to be attacked and seriously injured by insects. Plants kept in a vigorous, healthy condition are comparatively free from insect pests.

2. Varying the time and place of planting different crops. If insects are found to infest

a crop in one particular locality, plant in some other place the next season, and thus cause many of them to be starved. If they appear at a certain time in the season, plant so as to have the crop in an improper stage of development at that time. This is the practice in avoiding the Hessian fly on wheat.

3. Making use of some impassible barrier or obstruction. Like some others, this can only be applied to a few insects. The canker worm is a well-known example. The female perfect insect is wingless, and the remedy consists in placing around the trunks of the apple trees some barrier which the insect cannot surmount, thus preventing her from depositing her eggs on the trees.

4. Applying some agent that renders the plant or the vicinity in which it grows obnoxious to the insect.

II. Remedial measures can be grouped as follows:

1. Applying poison to the plant upon which the insect feeds.

2. Applying substances directly to the body of the insect.

3. To hand-pick, entrap and kill by miscellaneous means.

The following experiments are suggested for the members of the Horticultural society:

1. For the current and gossberry worm, cover the ground in the vicinity of several bushes with coal ashes to a depth of ten or twelve inches. Should extend two feet on either side of row.

2. For the codling moth or apple worm, spread fresh gas lime to a depth of two or three inches under one or more apple trees. This should be done when the apple trees are in blossom, and another similar application should be made about six weeks later.

3. For the plum curculio, dip eight to ten corncobs, or as many pieces of woollen rags, in coal tar, and hang these at different points in the plum tree. This should be done immediately after the blossoms have fallen. The cobs or rags should be dipped in the tar every two weeks.

4. For the aphid, or green fly on house plants, make a solution of whale oil soap, a quarter of a pound of soap to six quarts of water. Thoroughly sprinkle or wash the plants with this solution every month.

5. To clear stables or henneries of vermin, thoroughly sprinkle or spray the same with kerosene.

6. To destroy the striped cucumber or squash beetle, moisten with kerosene the inner folds of some rags or cloths, and place these in the center of, or near the hills. As soon as the cloths become dry moisten them again.

7. For ants that frequently infest pantries and other places use a sponge well moistened with sweetened water. When well filled with the insects destroy by dipping into boiling water.

8. For the common house fly try pyrethrum or Persian insect powder, which should be used in small quantities by dusting with an atomizer in infested rooms.

Mr. Merion said that he had tried the corn-cob and tar experiment a number of years ago, and it failed entirely to keep out the curculio. His son tried last year coal ashes under apple trees, and gathered the best apples he had ever had. Ants had been driven from his place by bating them with molasses and then scalding them.

Mr. Poste had tried coal ashes and believed it a thorough preventive for currant worms, and further than this the ashes act as a mulch much needed by small fruits. As to gas lime he had used it by sprinkling his plum trees with water and throwing the lime over the trees. The lime stuck to the trees and the odor remained longer than in most preventive remedies. After showers and heavy dews it would have to be renewed. He asked if there was anything in the lime injurious to plants so as to prevent it being used as a fertilizer.

Colonel Innis tried putting gas lime on soil in which he sowed wheat. It was spread evenly and harrowed in, but not a single spear of wheat appeared.

Mr. Janney said that a friend tried sprinkling gas lime on land where he wished to grow a meadow, but did not have a blade of grass for over two years.

Mr. Wilson had tried coal tar very persistently for two years, but it did not save his plums.

Mr. Alwood then gave some notes on results of experiments with potatoes at the Experiment Station. He said: "Of 34 varieties of early potatoes, the earliest was 'Stray Beauty,' but it is not a good potato. Several ripened July 25, the best of which is 'Charles Downing,' which yielded 375 bushels per acre. It is one of the very best for the table, ranking with the 'Snowflake,' at the head of the list. The largest yield of any variety was 471 bushels per acre. Of the medium late varieties, 28 were tried. The best in table quality were 'Ohio' and 'White Star.' Of the late varieties 'Rural Blush' stands at the head of the list for the table. The tests for table quality were made in December and January last."

Dr. Townshend said that some of the late potatoes are better now than they were at the

time they were tested, and some will be better still later.

Mr. Green then gave estimates on the cost of procuring new varieties of small fruits for the Society to experiment with. A sufficient number of most of the new varieties could be procured for the sum of \$25. There are a number of new varieties, especially of strawberries, that would be valuable to the Society. The only way that this can be accomplished is to have each member taking plants give a certificate stating that they would report the results of the experiment, or be required to pay for the plants.

On motion of Colonel Innis, a sum not to exceed \$25 was ordered appropriated for the purchase of new varieties of small fruits for experiments by the members of the Society. The selection of varieties was left in the hands of Mr. Green.

The following bills against the Society were presented by the Secretary and ordered paid:

To Ohio State Journal Co.,		Dr.
1885.		
Nov. 2.	200 copies Proceedings for Oct.....	\$2 00
Nov. 24.	200 full note circulars..	2 00
Dec. 21.	100 copies Weekly Supplement	2 00
		— \$6 co
To Gazette Printing House,		Dr.
1886.		
Feb 3.	300 postal cards and printing	\$4 00
Feb. 20.	500 Notices for Dues...	2 00
" "	200 Notices of Meeting	1 25

Feb. 20.	250 XXX Cream Envelopes.....	75
		— \$8 00

To L. D. Myers, P. M., Dr.		
Feb. 20.	100 Postage Stamps.....	\$2 00

To Siebert & Lilley, Dr.		
Feb. 13.	1 Blank Receipt Book,	20

Total bills presented.....	\$16 20
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The Secretary reported the following fees and dues received to date:

E. W. Mark, membership and dues for 1886	\$1 50
J. L. Gordon, membership.....	1 00
Geo. M. Peters, membership.....	1 00
H. Lindenburg, dues for 1885 and '86..	1 00
W. R. Lazenby, dues for 1883, '84, '85 and '86.....	3 00
Total received.....	\$7 50

On motion of Prof. Lazenby an informal ballot was taken to nominate two members to the Board of Trade. Messrs. J. J. Janney and W. R. Lazenby received the nomination and were elected *viva voce* to represent the Society in the above organization.

The following appointments were made for the March meeting: Mr. Poste, to prepare a paper on "The Rose Slug, and Remedies for It;" Mr. Alwood to continue his talk on Potatoes, giving culture; and Dr. Townshend for an address on "Plant Nutrition."

The Society then adjourned.

W. S. DEVOL, *Secretary*.



Columbus horticultural Society.

BOARD OF TRADE ROOM, }
COLUMBUS, OHIO, March 27, 1886. }

The Society met and was called to order by the President.

On motion of Mr. Noble the reading of the minutes of the last meeting was dispensed with.

Mr. Noble moved that the Secretary be requested to forward to each member a copy of the printed proceedings of each meeting. Motion carried.

Dr. N. S. Townshend then addressed the Society on "Plant Nutrition.

Mr. Alwood followed with an address on "The Cultivation of Potatoes."

In planting upon the surface and at different depths, the best results were obtained at the Experiment Station at four inches deep.

In the use of fertilizers, the average maximum yields from fertilized plots were greater than those from unfertilized; but the maximum yields were from those plots in which the minimum amount of fertilizers was used.

In different methods of cutting, the best results were obtained when several eyes cut to a piece.

Prof. Lazenby—The question of deterioration of varieties is one of great importance, and I should like to hear it discussed at a meeting of the Society.

On motion, Col. G. S. Innes was requested to present a paper on this subject at the next meeting of the Society.

Dr. Townshend was requested to continue the subject of Plant Nutrition in an address before the Society at the next meeting.

On motion, Prof. Lazenby was instructed to procure a stenographer to take a *verbatim* report of the proceedings of the Society at the next meeting.

On motion, the Society agreed to meet hereafter promptly at 3 o'clock p. m.

Reports of standing committees were called for, as follows:

1. On Botany. Dr. N. S. Townshend. No report.

2. On Entomology. Prof. Wm. R. Lazenby. No report.

3. On Meteorology. W. S. Devol. As authorized by Sec. 11 of the Constitution, he had chosen as his associates upon the committee, Messrs. E. H. Mark and W. B. Alwood.

4. On Library. J. J. Janney. I have received from the binder the following books: 4 vols. Journal of Horticulture, 1 vol. American Agriculturist, and 2 vols. Country Gentleman.

The chairmen of the other committees were absent, or not prepared to report.

Mr. Janney showed some apples, variety unknown, that were in good condition, but had been frozen a large part of the winter, as they were in an open building.

Prof. Lazenby said that it was a very common practice in western New York, for apples to be kept by being frozen.

An apple of the Willow Twig variety was exhibited, which had been sent by Mr. W. K. Famliton; was grown in 1884 by Clara Johnson, and had been with several others upon a board in the cellar and had been once frozen. It was not in good condition.

The following bills were read by the Secretary, and ordered paid:

To Siebert & Lilley, Dr.	
Mar. 10. Bdg. 4 vols. Journal of Horticulture @ \$1.25	\$5.00
" " Bdg. 1 vol. American Agriculturist	1.40
" " Bdg. 2 vols. Country Gentleman @ \$1.75	3.50
	<hr/> \$9.90
To Ohio State Journal Co., Dr.	
Mar. 1. 200 copies proceedings for Feb	\$2.00
	<hr/> \$11.90

The Society then adjourned.

W. S. DEVOL, *Secretary*.

Columbus horticultural Society.

BOARD OF TRADE ROOM, }
SATURDAY, April 24, 1886. }

The President being absent, the Vice President took the chair.

Mr. and Mrs. Emmett Mix, of Avenue, O., were elected members of the Society.

Prof. Lazenby, as special committee of one, reported that the services of a stenographer had been secured at a very moderate cost, but through some misunderstanding, was not present at the meeting.

In the absence of the chairman of the Committee on Botany, Prof. Lazenby reported: There is a remarkably large number of wild flowers in bloom. There have been seasons when there were as many flowers in bloom at this time of the year, but he had never seen a time when so many came into bloom in so short a time. But three species had been observed prior to the cold snap. That checked all advancement. But when it became warm all the early flowers seemed to be ready to burst into bloom, and it would be safe to say that there are now fifty species in bloom here in central Ohio.

The chairman of the Committee on Entomology reported: That there had been tried at the experimental station within a short time, a remedy for the scale insect called "Polysolve." Good results were obtained when the liquid was applied with a stiff brush so as to loosen the scales. Whether the beneficial effect was due to the mechanical injury or to the work of the liquid is a question.

In answer to a question as to remedies for the Plum Curculio, Prof. Lozenby said: No thoroughly efficient, practical remedy has been learned. There are many that are partially effective, and some preventive measures that are good.

A general discussion followed, from which it was observed: That plum and other fruit trees along public highways over which there is much travel, and consequent jarring of the ground, are less liable to injury from insects than those in small fruit gardens.

Trees so situated as to be easily jarred several times daily are seldom injured by the curculio, and bear good crops. Trees of plum so situated near a dwelling that the prevailing winds will carry coal smoke over them, have been observed to bear well. A few trees in a small enclosure in which poultry was kept were comparatively free from curcu-

lio. Of preventive measures, fresh gas lime spread under the trees every ten days or two weeks during the season when the curculio works, was found to be most effective.

As a member of the committee on Fruits, Mr. Aldrich reported: The prospect for fruit is now very flattering indeed, and should there be no late frosts, it is reasonable to expect an abundance of fruit. Some raspberry canes were stung pretty badly, and others were frozen so as to require pretty severe cutting back. Strawberries were in bloom earlier than last year.

Mr. Wilson—I have noticed that many of the apple trees appeared to be stung and that the bark was dead in patches, and in some instances the trees killed.

Mr. Mitchell thought this injury due to the exposure of the trunk and branches to the southwest sun in winter. The freezing and thawing loosens the bark and kills it. The injury is always on that side of the tree, and some varieties, such as the Smith's Cider, are more liable to injury than others. Those with a low head are not injured. Orchards on low ground not under-drained are subject to disease and die from it.

The Secretary read a communication from Mr. Poste, asking to be continued in the appointment for a paper on the Rose Slug. Also one from C. H. Lindenburg stating that he would not be able to attend the meetings of the society, and asking that his name be taken from the roll.

On motion, the requests were granted.

A tray of 26 varieties of carnations was shown, accompanied by a communication stating that they were raised from seed sown in the spring of 1885, began blooming March 14, 1886, and were still budding and blooming.

On motion of Mr. Devol, a committee of three was appointed to examine and report at once on whether they appear worthy of propagation and name.

The following report was submitted: That, in our judgment, the entire collection are worthy of propagation; and especially are numbers 1, 8, 10, 11, 19, 24 and 26 of a high order and deserving of names and propagation.

MRS. P. J. LOFLAND,
MRS. HORACE WILSON,
REV. W. R. PARSONS,
Committee.

On motion, the report was accepted and the committee discharged.

On motion, the Secretary was requested to prepare a suitable programme for the next meeting.

On motion of Mr. Alwood, a special committee of three were appointed on programme, the Secretary to be chairman of the committee. Mrs. N. E. Lovejoy and Mr. Horace Wilson were selected as the other members of the committee.

The Secretary read the following, which was unanimously adopted :

The Columbus Horticultural Society, recognizing the importance of such investigations as are being prosecuted at the Ohio Agricultural Experiment Station, and believing that those in charge are conscientious and energetic in their work, employing to the best advantage the means at their command, and to the end for which the Station was established, adopts the following resolutions :

Resolved, That the character and amount of work done at the Ohio Agricultural Experiment Station meets with the hearty approval of those for whose good the Station was established, as evinced by the communications received at this Station and by the public expressions in the press of the State,

Resolved, That the State should maintain the Experiment Station by a liberal appropriation, that the investigations now under way may be continued, and that sum of \$5,000 is the last amount with which this can be done.

The following bills were read and ordered paid :

To DeWitt C. Jones, P. M., Dr.

Apr. 16, Postage \$1 50

To Siebert & Lilley, Dr.

Feb. 27.

Bdg. 17 vols. Mag'ne of Hort. @ 70c.. \$11 90

do 11 " Downing's do @ 60c.. 6 60

2 Memo. Books. 1 10

\$19 60

To O. W. Aldrich, Dr.

Apr. 24, Subs. "Orchard and Garden," 50

To W. S. Devol, Dr.

Apr 24.

Services of 5 meetings @ \$1.50.. \$7 50

Total bills rendered.....\$27 60

The Secretary reported the receipt of the following sums since the February meeting :

From—

J. R. Henthall, membership fee..... \$1 00

N. S. Townshend dues for 1883, '84, '85 2 50

Edw. Orton, dues for 1885 and '86 1 00

D. W. Archer, dues for 1885 and '86... 1 00

Geo. C. Krauss, dues for 1885 and '86... 1 00

C. H. Lindenberg, dues for 1883, '84, '85 and '86..... 3 00

W. S. Devol, dues for 1886 50

O. W. Aldrich, dues for 1886..... 50

Emmett Mix, membership fee..... 1 00

W. R. Parsons, membership fee..... 1 00

Total receipts.....\$12 50

Adjourned.

W. S. DEVOL, *Secretary*.



PROCEEDINGS

OF THE

Columbus Horticultural Society,

SATURDAY, MAY 29TH, 1886.

The Society assembled at 3 P. M., with President Westwater in the chair.

President—The first business in order will be the reading of the minutes of the last meeting.

Upon the reading of the minutes, amendments and corrections were called for, and there being none, they were announced as approved.

President—Election of members is next in order. I have the pleasure of nominating Mrs. R. D. Harrison for membership of this Society. Are there any other names for membership?

Upon motion of Dr. Townshend, Mrs. R. D. Harrison was elected a member of the Society by a unanimous vote.

Reports of special committees were then called for.

Mr. Devol—I report the following as being the program prepared for the next meeting. The place it is to be held, and whether we are to hold the meeting or not at the time requested here, are to be decided. This is for the "Strawberry Meeting."

The program was then read as follows:

Early History of the Strawberry, Dr. N. S. Townshend.

Improvement of the Strawberry within the Last Thirty Years, J. J. Janney.

The Strawberry in Literature.

Preserving Strawberries for Winter Use, Mrs. N. E. Lovejoy.

Fertilization of the Strawberry, William R. Lazenby.

The Market Gardeners' Strawberry, J. B. Mitchell.

Strawberry Culture in the Home Garden, O. W. Aldrich.

Newer Varieties of Strawberries, W. J. Green.

Basket supper at 5 P. M. You are cordially invited to be present.

President—What is your pleasure with the report that has just been read? Any amendments or alterations suggested?

Mr. Merion—Our Pioneer Association meets next Saturday, and it would be very much in the way to attend this other meeting. Quite a number of us are members of both. Can't you make this Friday afternoon instead of Saturday? I can't get away from the Fair Grounds before 4 o'clock.

President—I would state that one of the reasons, as I understand it, why this meeting was put on Saturday is that it is the only day at the University when our friends could be present. Any other day of the week they could not attend. Would the second Saturday in the month be too late? Would strawberries be past their prime?

Mr. Devol—It will be too late for the meeting at the University. Some of the berries there will be gone, especially some of the newer varieties.

President—You cannot possibly have it on Friday at 3 o'clock? It is certainly very desirable to have you all present on that occasion, if we can.

Mr. Devol—As far as the Horticultural Hall and conveniences on the grounds are concerned, it would perhaps be as well to have it on Friday afternoon; but there is also an affair to take place on Friday afternoon that might interfere with this. That is the Prize Drill. That takes place on Friday afternoon.

Upon motion of Dr. Townshend, the report was approved by the Society, and Saturday, June 5, the date chosen.

President—Reports of standing committees come next. Anything from any of them today?

Mr. Janney, librarian, then offered the following report:

The undersigned, Librarian of the Colum-

bus Horticultural Society, would respectfully report :

That he has catalogued the books belonging to the Society, and reports the following as a list of the same :

- American Agriculturist, vols. 41 and 42.
- Book of the Garden, Chas. McIntosh, two volumes.
- Beautiful Homes, Frank Scott.
- Beautiful Ferns, Danl. Cady Eaton.
- Bulbs, E. S. Rand.
- Bushberg Catalogue of Grapes.
- Country Gentleman, vol. 48.
- Entomological Commission, 3rd Report, 1880-1882.
- Fertilization of Flowers, Herman Muller.
- Flowers of the Field and Forest, A. B. Hervey.
- Ferns in Their Homes and Ours, John Robinson.
- Flowers for the Parlor and Garden, E. S. Rand, jr.
- Garden Flowers, How to Cultivate Them, E. S. Rand, jr.
- Handbook of Hardy Trees and Shrubs, W. B. Hemsley.
- Horticulturist, A. J. Downing, 10 volumes.
- Insects Injurious to Vegetation, T. D. Harris.
- Journal of Horticulture and Cottage Gardener, 4 volumes.
- Magazine of Horticulture, Hovey, 15 vols.
- Natural History of Plants, H. Baillon, two volumes.
- Our Common Insects, A. S. Packard.
- Orchids, E. S. Rand.
- Popular Flowers, E. S. Rand.
- Ohio Agricultural Report, 1879, 1883.
- Report Commissioner Agriculture, 1881, 1882, 1883, 1884.
- Report U. S. Entomological Commissioner: Rocky Mountain Locust. Riley, Packard and Thomas.
- The Rose, H. B. Elwanger.
- Rhododendrons, E. S. Rand.
- Transactions of the Mississippi Valley Horticultural Society, vol. 2, 1884.
- Western Horticultural Review, 3 volumes.
- Wayside Flowers, Thos. Meehan.
- Window Gardener, E. S. Rand.
- The Society also possesses a large number of pamphlets, which the undersigned has not been able to classify.

J. J. JANNEY, *Librarian.*

President—Any suggestions, Mr. Janney, in regard to publishing a catalogue, or anything of the kind ?

Mr. Janney—No, I have no suggestions to make.

President—What is the pleasure of the

Society with regard to the report that has just been read ?

Upon motion, it was agreed to place the report upon the minutes as read.

Mr. Janney—I would remark that I have an indexed catalogue.

President—Communications and correspondence is next in order.

Mr. Devol—Mr. President, there is a communication here in regard to lithographs, and there are samples sent, but I think the Society has never had any use for diplomas or anything of the kind.

President—What is the communication ?

Mr. Devol—It is simply submitting diplomas and lithographic work for publications—a printed announcement.

Mr. Janney—There is a communication there to attend the meeting of the Seedsmen's National Convention, Nurserymen and Seedsmen—simply a circular. I thought I brought with me a circular letter from Mr. Campbell about the summer meeting of the State Horticultural Society to be held at Barnesville on the 8th of June, to which we are invited.

After some little discussion as to the propriety of accepting the invitation as a society or individually, the following motion was unanimously carried :

Moved, That the invitation to attend the summer meeting of the State Horticultural Society at Barnesville be accepted and thanks returned for the same, and that all members of this Society who attend be authorized as delegates of this Society.

Mr. O. W. Aldrich was then called upon for his report upon the condition of small fruits.

Mr. Aldrich spoke as follows :

Mr. President : I have not prepared a written report, because I saw in the printed program that there would be a stenographer present to take down the proceedings. I will give verbally my observations in regard to the conditions of things.

First, and perhaps of the greatest importance, would be the strawberry. So far as I can learn, not merely in our own part of the country, but throughout the whole United States, the prospects of the strawberry crop are very much finer than usual at the commencement of the season, and I find in our own locality the various kinds of strawberries, and especially those that ought to be in full bearing, are very full of fruit.

To-day, I picked up a paper from Central Illinois where the berries have not commenced to ripen, and it stated that strawberries were selling at 6 cents a quart. Still further in the west, in Missouri, I found that the same abundance appears to exist. I have not

learned so much from the east, but two or three weeks ago prospects for the crop there were equally favorable.

I find in our own locality, however, that just at this time, some of the varieties are affected with rust. The Cumberland on my place, in an old bed, is somewhat affected. I also find that the Downing and Capt. Jack are quite seriously affected. I have also noticed some varieties to be affected that are usually considered quite free from it. The Windsor Chief is an example.

I might also say a few words in regard to varieties of strawberries. The Crescent, whether old or new beds, seems to be exceedingly full of fruit. Last year, I set out seven or eight hundred plants about the 30th of August. I set about that number of old plants, knowing that was against the rule generally. I gave them exceedingly good care during the year, fertilizing them quite highly; and will say that I never saw such a lot of strawberry plants as I have, and I never saw plants with so many blossoms as are upon the old Crescents. On the 15th of May, I counted on one plant one hundred and eighty-nine berries. I set out at the same time about one hundred and fifty young plants, and of that number, perhaps only half grew, and they have very little fruit. I account for this from the different styles of root growth.

Along about the 30th of August, I set out a small plantation of fifteen or sixteen new varieties for the purpose of testing, and I got only a growth, nothing else. If one has failed to set out strawberries in the spring and wants some fruit the next year, if he will set out the Crescent in the fall, and some early varieties to fertilize the first blossoms, and then enough later varieties to fertilize the later blossoms, he will get a fair quantity of fruit. Of course, it is well understood that no person will set them in the fall for market. With the exception of the varieties that I have named, and perhaps the Jersey Queen and probably the Kentucky, one would not get enough from any of the other varieties to pay for gardening purposes.

The Norman, set out at the same time, made a very vigorous growth of foliage, but not more than one-half the plants have more than four or five berries on the stem, and in that respect I think my experience differs from that shown by the report of the Experiment Station, as far as the Norman being worth anything on my place.

The Cumberland, in an old bed on my place, are fuller this year than the first or second season vines.

The Mt. Vernon, set two or three years ago,

are much fuller this year than they were last. I find that they perfect a very nice crop.

The Miner's is not a good berry to set in the fall. It made about the poorest growth of anything that I have.

The Piper's Seedling is perhaps a little more vigorous in growth, but has fewer berries.

The Kentucky made a very poor growth in the Fall, and I thought the plants were nearly dead this Spring, but they almost all came up and will bear quite a little fruit, although the plants are not nearly so vigorous as some other varieties.

The Sucker State is the most promising for fall planting of any of the new varieties that I have tried. It is making a good growth, the foliage being clean and free from rust, with a good number of blossom stalks. The quality of the fruit upon my ground, I do not think quite as good as the Cumberland. The shape of the fruit is beautiful, and I fully agree with Mr. Green that the berry has not received the consideration that it deserves.

So far as I can learn, plantations set this year, except during the dry spell, seem to be doing very well. Those set before that time are making a good growth. Some set during the dry spell are not so good.

The raspberries seem to be improving as the season advances, especially the black-caps. The wood was not so strong in the spring as in some other seasons, but the young growth has started out very vigorously, and the plants are usually full of bloom, and the prospects of black-caps are that there will be fully an average crop in our locality. The same with those varieties of red that stood the winter. I find that the Turner is quite full of bloom. The Philadelphia that stood the severe weather a year ago, were badly injured by the winter last season, and the canes, some of them, were frozen to the ground and others badly killed back; but I find that wherever there was any wood left they are starting out and will produce some fruit. The young growth is very good this year—far in advance of what it was last year at this season. Black-cap canes upon an old plantation are very nearly four feet in height.

As to blackberries, there are very few raised in our neighborhood by cultivation. The wild blackberries are very full of blossoms. The Kittatinny is rusting quite badly. I did not find any rust upon a patch of fifty or sixty Lawtons, young plants set out last fall or this spring. I have not seen any signs of rust upon any other varieties.

The Current-Worm seems to have gotten the advantage of the farmers, and there are very few old bushes. I do not think that those

that remain are quite as full as usual. I have, by a free use of hellebore, succeeded in saving some plants.

In regard to gooseberries, I have some young plants of Houghton. They did pretty well.

In regard to cherries, varieties like the early Richmond are quite full of fruit.

Of peaches, we have very few in our locality. I don't know that I was to say anything about the larger fruits.

As to plums, I have not seen a great many old trees. I have upon my place six or seven plums that I am not sure of the varieties, but I think they are the Wild Goose. I think that one can not raise plums of that variety alone. I read only a very short time ago an article in regard to these varieties, in which it was said that scarcely any of the American varieties will fertilize themselves from their own pollen in this latitude, while in the South, they bear pollen sufficient to fertilize themselves, and that it requires two or three different varieties of the American plums set near each other for fertilization.

In regard to the grapes, I find that they are blossoming and setting their fruit very freely this year, much more so than usual. Unless they rot, or some disease of the foliage sets in, we shall certainly have a very full crop.

I don't know, Mr. President, that I have anything further.

President—One question as to your method of setting out strawberries. What is your plan? Do you set in hills or rows?

Mr. Aldrich—The young plants that I set out last year, I set pretty close together so that they could be kept in hills. I think for garden purposes, where the cultivation is high, the hill system is the best, but for marketing, I doubt whether it would pay the amount of work necessary to protect them during the winter. It would require more careful protection for the hills than for the rows. Now, the Crescent is considered the best for general cultivation, and in single hills. This would lead me to believe that the Crescent, as well as the larger varieties, will pay high culture and fertilization with an almost unbounded amount of fertilizers. There are some varieties that if fertilized too heavily will make a great many vines and not much fruit.

The address by Dr. N. S. Townshend, which had been announced, was then called for. Dr. Townshend spoke as follows:

Mr. President, Ladies and Gentlemen:—I have often regretted that so few of the good people of this city manifest an interest in the meetings of the Columbus Horticultural

Society. I was speaking with a gentleman the other day, and he said that the people of Columbus were too busy to spend time talking about posies and berries, and he did not think there was enough in horticulture and botany to justify the attendance of business men. I can not reach the gentleman who made this remark, but I should be glad to have our minds thoroughly impressed with the interest and value of these subjects, and therefore will ask your attention while I attempt to show that facts relating to plant life are worthy of our consideration.

First, you are all aware that plants are the food makers of the whole animal kingdom. All the food which animals use is obtained from plants, either directly or indirectly. At the March meeting, I endeavored to show in detail how food is made, I stated then, and repeat now in brief, how the plant converts matters that come in through its roots into food matter. A plant by its roots, takes from the soil carbon di-oxide and water. Suppose the plant takes six molecules—now the word "molecule" is not in common use. The difference between a molecule and an atom is this, the smallest amount of a simple element is an atom. If you put two or three elements or atoms together and form some compound, its smallest portion we call a molecule. Take, then, six of these molecules of carbon di-oxide and combine with five molecules of water. This is done in the plant under the influence of sun-light. The two substances are decomposed, and out of that material a new compound is made. Now, putting together that water and that carbonic acid makes starch, and liberates twelve atoms of oxygen. In that way, the manufacture of starch by the plant makes the atmosphere better for animal respiration, by setting free the oxygen and taking up the carbonic acid, or carbon di-oxide. Now, add to that starch one more atom of water, and you convert the starch into glucose or grape sugar. Then unite two molecules of grape sugar, and separate one of the molecules of water, and that little change makes cane sugar. These changes take place under the influence of sun-light in the leaves of the plant, and they are going on all about us during the spring and summer, whenever the plants are in full leave. Add ammonia which is nitrogen and hydrogen, and the articles which we use for food not only starch and sugar, but also albumen, gluten, etc. are formed. Certain mineral substances, such as sulphur, phosphorus, lime, iron, etc., are also taken into the plant, and the chemistry of changing them into food takes place in plants. No animal has the power to take these elements and convert them into food. But, you

say, some animals are carnivorous, and therefore, they are not dependent upon plants for their food. That appears to be true, but the animals which are fed upon get their food from plants, so that the food of carnivorous animals comes indirectly from plants. Huddibras says, "E'en little fleas have lesser fleas to bite 'em, and so on, *ad infinitum*." But where would even they get their food, did not the larger ones upon which they feed first get it from vegetables? A great many articles of food do not appear to come from plants. Some of us, perhaps, had beefsteak for breakfast, an animal contributed this, but the animal that furnished it was dependent upon plants to begin with. So that this statement may be made, that whether it is meat, vegetables, fruit or beverages, such as tea or coffee, or the spices, all of these come from the vegetable kingdom. Water, of course, we do not claim as belonging to the vegetable kingdom, but the iron of our blood, and the phosphate of lime that makes our bones have been prepared by plants. The statement, then, is true, that to plants we owe our food.

Second. Plants are interesting to us because they furnish a large amount of material for use in the arts. Much of our building material is from the vegetable kingdom. The timber of our houses, many of the bridges we pass over, and the furniture we are using, these are produced by the vegetable kingdom. All our clothing is also furnished by plants. But some of our garments, you may say are wool. Does not that come from the sheep? But where did the sheep obtain the food which made its wool? Some of our clothes are silk. But where did the silk worm obtain the material from which to make the silk? So you see that every article we wear has been furnished, directly or indirectly, through plants. Some of us have on boots made of leather. Even they came from an animal that fed on plants, and they have been tanned by material obtained from plants. The coloring matter that we use, giving to our garments their pleasant color has been obtained from plants. So that the coloring and preparation of the larger portion of the articles used in the arts has been provided by the vegetable kingdom. It has not only furnished us with building material, clothing, and coloring, but it affords us the means of making a record of our thoughts upon paper, which is another valuable contribution to our happiness.

Third. Again, plants are the objects of much of the industry and commerce among us. Take the farmers of the country and the horticulturists, and those that are engaged in plant raising for food and clothing and various other things. Half our population are

engaged in that kind of work. The material for a large share of our commerce, whether domestic or foreign, is furnished by plants. The ships that enter and go out of our harbors are laden with cotton, with wheat, with corn, with the products of all climes for the purpose of exchange. The bulk of it is from plants. I should say, then, that our industry and our commerce is largely dependent upon plants, and for this reason, plants are worthy of our attention.

Fourth. We are absolutely dependent upon plants for life. If it were not for them, the air which we breathe would become loaded with carbonic acid, and would be absolutely poisonous to us. If a man goes into a deep well where the air is not changed and into which the carbonic acid, being heavier than air, has settled, he is apt to be suffocated. I think one of our papers yesterday presented a case of some poor man who went into a deep well, and was found there dead. How is air purified? It is the business of plants to take carbonic acid from the atmosphere and make it fit for respiration. Plants not only furnish our breakfast, dinner and supper, but they purify the air we breathe from moment to moment. Plants purify the water we drink, just as much as they purify the air we breathe. During the war, as Medical Inspector, I was for a time on duty at St. Louis. Near that city was a large hospital known as Benton Barracks. A person living in that neighborhood called upon the mayor of the city and made this complaint. He said that he lived upon the margin of a large pond of several acres into which the sewerage of the hospital was discharged, and now, the water, instead of being clear, as it had always been, was covered with a green scum, and this was the reason of his complaint, as he feared his family would all suffer from the impure water. The mayor invited me, as Medical Inspector, to get into his carriage and look at the pond. When we came in sight of the small lake or pond, we saw it covered all over with something as green as a meadow. The mayor was very much astonished and shocked; he did not see how anybody could possibly live in that locality. He evidently regarded that scum as something very dreadful. I stepped down to the margin of the water and picked up a little of this scum, called the attention of the mayor and told him we had here a very pretty little plant, the *Lemna polyrrhiza*. There were two leaves spread open, each larger than a flax seed, and from each were several little roots running down into the water. The common name is Duck Meat. I picked up these plants, took some of them into my mouth and chewed them, then took

a cup I had with me and dipped up some of this water and passed it round to see if they could perceive any odor. It was very nice clear water indeed. I drank some of it, and then said to the mayor: "A good deal of filth has been discharged into this pond, and if this little plant had not come to the relief of this gentleman and his family, this would have been very filthy water, but fortunately, this little plant has spread over a large portion of the pond, and that is the purifier." These plants had been living upon the filth that had been thrown into the pond, and there were so many of them that they had kept the water pure, so far as we could see. The gentleman who had made the complaint examined this *Lemna* and saw that it was a veritable plant. There was no scum about it. He thanked us and said that he and his family had been half frightened to death. "But in future I will make no more complaints," said he. Aquatic plants are doing this for us everywhere. We ought not to call them scum and give them bad names, when they do not deserve it. It is the business of plants that grow upon water to make that water clean.

Member—I would like to ask if that isn't the same thing that we find in the gutters in New Orleans and that is so abundant in many of them?

I do not distinctly remember, but I think the plant is not the same. But the effect, in some degree, is probably the same. Plants purify the soil as well as the air and water. Our earth has been inhabited an immense number of years, and many animals have been buried in it. If there had not been anything to take care of this decaying material, this earth would now be one vast cemetery. But the matter that has been placed below or upon the surface has undergone changes and come up in new forms. We do not believe in the old doctrine of the transmigration of souls, but we do believe in the transmigration of bodies, or rather, of matter. The material of our bodies is constantly changing, and matter which we bury to-day, after a time comes up in new forms. Plants that grow upon the surface of the earth are feeding upon decomposing and changing vegetable and animal matter. It is by the action of plants that the world is kept clean, in its air, its water, and its soil.

Fifth, Plants are valuable in medicine. It is many centuries since the use of opium was discovered, and by many it is still esteemed as the *Magnus Dei Donum*. Then, so far as we know, a great deal of this world would scarcely be habitable, were it not for the discovery of quinine. It has been much used

in the settlement of the Mississippi Valley, and it may be presumed that a large portion of Columbus people have made its acquaintance at some time.

Sixth, There are other reasons why we should be interested in plants. They have a place in history, and we can scarcely understand what we read from day to day, without some knowledge of plant life. In ancient Egypt, we read that the people ate Lotus, which is a sort of water bean. When the Nile flooded the valley, these grew, and when the waters passed away they were gathered. The root was eaten, and also the seed. I do not know that you have seen a water bean. Here is the seed vessel of our *Nelumbium Luteum* which I brought from the Missouri River near Omaha. This is old and a little discolored, but these beans might be taken out and eaten. The people who lived in Egypt ate them, and they made very good food. This is not the same Lotus that we read of in the *Odessey* of Homer, and which, it is said, those who ate of it forgot their home and native land. In Egypt, the men and boys took these seeds and put some clay on them and threw them out upon the water, where they would take root and grow. We read, "Cast thy bread upon the waters, and it shall return to thee after many days." This was the kind of bread they cast upon the waters. They put a little clay around one of these beans and tossed it into the water. Some have supposed that it was rice to which reference was made, but I have seen rice sown, and I think the seed is never thrown upon the water. This was probably the bread that was cast upon the waters and that was expected to appear after many days. Another plant grows there in Egypt, the *Papyrus*, from which we get our word "paper." Pieces of *Papyrus* have been found that keep the records of men who lived thousands of years ago. The city of Athens, when it was founded, had another name, and after a time, still another, but the good people concluded that the city should be named after anybody that would do the most for the city. Neptune, the god of the sea, undertook to make his donation to the city. He struck the sea, and from its foam sprang the horse. This was found to be an extremely valuable present to the city, because the horse was so useful in war. But Athena, or Minerva, touched her foot to the ground, and up sprang the Olive, and the good people had sense enough to see that this gift was of more value to them than the horse, because it was a source of wealth and prosperity in peace, while the horse was chiefly useful in war. So Athena had the honor of naming the city. If you read his-

tory, you will find that almost every act of the past has some bearing upon plant life, or plants are in some way associated with events. At one time, I had the pleasure of taking a ride through a part of the State of Maryland. In the carriage, besides the owner, was Grace Greenwood, of whom all the children have heard. We were closely observing and talking of what we saw, and I remember quoting an old nursery rhyme,

"Fe, fi, fo, fum, I smell the blood of a Scotchman,

And be he alive, or be he dead, I'll grind his bones to make my bread."

Grace Greenwood wanted to know what I meant. I said there had been a Scotchman along there sometime, and as a proof of it, pointed out a plant of heather, which is very common in Scotland, but is seldom or never seen growing wild in this country. The gentleman driving said, "This reminds me of an old tradition. That old place which you see there is the home where the first Governor of Maryland, Earl Dinwiddie, a Scotchman, lived. He brought his wife with him, but after a while she began to get homesick and wanted to see her native land again. The Earl then sent his gardener back to Scotland and told him to gather up all the flowers and shrubs he could bring, and plant them there, so that his wife might think this was like home. So these Scotch flowers and shrubs were planted where you find them to-day." This recalled many circumstances of interest. In short, if one is not familiar with plant lore, very many of the pleasant things of history are lost.

Seventh, Plants are closely connected with the mythology of the past. To understand the myths and legends of India, Babylon, Persia, and other ancient countries, a good knowledge of plants is indispensable. Among the objects that were treated with greatest veneration were trees. Two or three, in particular, are noticed in the mythology of different countries. You will find references to the Tree of Life in half a dozen mythologies, and to the Tree of Knowledge in others. How came those people to take such an interest in trees, and to give them such a place in their religious observances? Some say they looked upon trees as a manifestation of an ever living Power. The tree leaves out, blossoms, and bears fruit, but in the winter, apparently, the tree is dead. The next spring, it clothes itself anew in leaves and flowers, and this is repeated year after year. A boy notices a tree not far from his home, and he lives by that tree until he becomes an old man, but there stands the tree year after year, and fresh as ever, after the man has

passed away. Is it strange that men should have had a feeling of awe, or even adoration, in the presence of such objects? As to the Tree of Knowledge, you will find various interpretations. In some portions of Asia, the *Soma*, a tree belonging to the natural order of *Apo-cynacea*, to which belongs our Oleander, has been regarded as the Tree of Knowledge. It contains a milky juice, and when drunk it produces a certain amount of intoxication. When a man is half drunk, he is usually very full of knowledge, and this state they seemed to think very desirable, especially when obtained in such an easy way. It need not surprise us that the gods of those days should prohibit the acquisition of knowledge by such methods. Take up the mythology of any people. You will find that trees, shrubs and plants occupy quite a large place. You have read the story of the gardens of Hesperides. In that garden there grew a tree which bore golden apples. Although the tree was guarded by a terrible serpent, yet Hercules obtained the apples. These myths were doubtless invented to explain natural phenomena not then understood. The twelve great labors of Hercules were perhaps intended to represent the sun passing through the twelve signs of the zodiac. Plants and trees so enter into the mythology of the distant past that one can hardly understand their myths and legends without comprehending the relations which plants and trees bore to the life of those people.

Eighth. The tree, of course, has a large place in poetry. In the arrangements for our next meeting, some one, I see, is expected to read a paper in regard to the place of the strawberry in poetry and literature. Just think of the place that trees and flowers have in poetry. If I should begin to repeat the poems written on trees, somebody would undoubtedly cry out, "Woodman, spare that tree." Or, if I should begin to recite the hundreds of poems on flowers, I can imagine how anxious you would be for the "Last Rose of Summer." It is not simply the direct reference to the trees and flowers, but our language is made up of figurative and poetical expressions drawn from plant life. Had Mr. Wilson been speaking instead of myself, you might have said, "What a flowery speech." You could hardly have expressed your admiration of a beautiful speech without using some of the pleasing terms which plants supply. Plants have not only filled our language with beautiful terms, but even the names of our plants are poetical. Take the little plant which perhaps all of us have seen to-day. What is it? The daisy, the day's eye. The little plant opens its eye to the rising sun, and

then it stays open all day, unless it is cloudy, and shuts at night. And so with thousands of our other plants. We find their names full of poetry. But I have not time to elaborate this point.

Nine. There is still another point in regard to plants, which will convince us how worthy they are of our attention, and that is their value in education. Frœbel showed us that teaching should not consist in the use of abstract words or thoughts, but the child should have the object of study in his hands and before his eyes. What is botany doing for all the world? It is presenting a multitude of objects that every moment invite us to careful observation. We see a flower, we cannot pass it by, it is so attractive we have to see what it is. We observe its color, size, shape, etc. There are so many resemblances, and so many differences, we cannot help making comparisons, and next after a comparison comes a judgment. Our minds are drawn out unconsciously. The child who has no teacher, other than a flower, begins to develop his faculties for observation, comparison and judgment, and with a little instruction he gets hold of the principle of classification. And next, he learns to understand, and perhaps to give, descriptive names to what he sees. Any branch of physical science may serve to stimulate and draw out the faculties, but botany gives to us in the simplest, easiest, and pleasantest way the very foundation of a scientific education. No subject is more generally attractive. There is that about flowers which nobody can afford to overlook. Shakespeare says,

"The man who hath no music in his soul

Is fit for treasons, stratagems and spoils."

And we may say the same of the man who has no beauty in his soul.

Plants not only aid in elementary training, but they take us a long way beyond the merely intellectual. They awaken the sensibilities and excite within us admiration for what is beautiful, harmonious and orderly. Perhaps they do even more than this. We have looked at trees and noted how they were covered with wholesome and luscious fruit. We judge of the tree by its fruits, and we cannot help but think that if some men would bear fruit as some trees bear, we should have a very different world.

To conclude, I have endeavored to show that facts relating to plant life are eminently worthy of our attention, and such attention, I cannot but hope, will help us to appreciate more and more all that is true, and beautiful, and good.

Member—Mr. President, I would like to know if these lectures are to be distributed.

President—The Secretary can tell you.

Secretary—I believe that the understanding from the motion that was made was, that the proceedings of the meetings should be printed after each meeting and distributed to every member of the Society, and I think that was one object in having a full stenographic report. I have also an intention of having the whole printed in an annual report.

President—Is there any arrangement by which the address just heard might be published in the papers now?

Secretary—I could only get extracts published, and it will be cheaper to get them published in pamphlet form.

Mr. Devol—Mr. President, I move you that a committee of five ladies be appointed to take charge of the tables and general arrangements for the supper at the Strawberry Meeting, and that they have authority to employ help.

This motion was unanimously carried, and the President appointed Mrs. P. J. Lofland, Mrs. Wm. Merion, Mrs. J. J. Nelson, Mrs. C. W. Critchfield, and Mrs. Dr. Jones.

Mr. Aldrich—I will call up a small matter. I have noticed in some of the latest magazines references to a new publication started at Rochester, N. Y., which is spoken of as a "Horticultural Art Journal." From all I have seen of it, it would be a very desirable thing for the Society to have. It is a monthly at \$3 a year, and is spoken of in the highest terms. If the Librarian has failed to notice this matter, I recommend it to his notice.

Mr. Janney—The Librarian has had the matter under consideration, and has been waiting until he could see what the magazine is.

Secretary—There is a basket of berries, two varieties. Mr. Jones brought them, and asks the members of the Society what they think of them and what they think the names of the varieties are.

The following bills were read and ordered paid:

	Gazette Printing House, Cr.	
April 16.	1,000 envelopes.....	\$3 00
" "	200 ½ note circulars	1 75
May 24.	200 ½ note circulars	1 75
		\$6 50
	DeWitt C. Jones, P. M., Cr.	
May 24.	\$1 00

The following sum was received for dues:
May 29. Horace Wilson, dues for '86...\$0 50
Upon motion, the Society adjourned.

W. S. DEVOL, Secretary.

J. M. WESTWATER, President.

Columbus Horticultural Society.

HORTICULTURAL HALL, }
OHIO STATE UNIVERSITY, June 5th, 1886. }

The Third Annual Strawberry Meeting of the Columbus Horticultural Society was held at the State University Grounds. The society was called to order at 4 P. M., and in the absence of both President and Vice President, W. H. Scott, of the University, was placed in the chair by acclamation.

President Scott—This is, I understand, a special meeting of the Society for the purpose of hearing the papers announced on the program that I hold in my hand. The first subject is by N. S. Townshend, :

EARLY HISTORY OF THE STRAWBERRY.

Mr. President, Ladies and Gentlemen : I have been requested to say a few words about the early history of the strawberry. I have also been admonished that, inasmuch as several speeches were expected, each one must be short. Fortunately for us all, the history of the berry will bear more compression than the berry will, and it is equally fortunate for us that upon the first two chapters of the subject but little is known, at least by your speaker.

The evolution of the strawberry would be the first of the chapters to which I have referred. This plant belongs to the Rosaceæ, an order which, in this climate, contains more delicious fruits and beautiful flowers than any other. The order Rosaceæ also contains many unattractive and lowly plants, and it would be interesting to know from which of these the strawberry has been evolved. Some of the Potentillas have been called Wild Strawberry, and if they only had a fleshy receptacle, instead of a dry one, they would be strawberries ; but is this the way the strawberry came ? I can only say I don't know.

The classical history of the strawberry, so far as I know, must be equally brief. De Candolle, in his "Origin of Cultivated Plants," says the strawberry was not cultivated either by Greeks or Romans. I have looked over the long list of farming and garden plants enumerated and described by Columella, and the strawberry is not among them. So the classical history of the strawberry is very short.

The first of English writers to mention the strawberry, so far as I know is John Lydgate, who lived soon after Chaucer. In a song of

his, called "London Lickpenny," he mentions "strawberries ripe" as already among London cries. Lydgate wrote about A. D. 1430; and it is worthy of note that he calls this "stray berry." A century or more later, Thomas Tusser, in his "Five Hundred Points of Good Husbandry," says—

"If frost continues, regard this as a law,
That strawberries need to be covered with straw."

About A. D. 1600 Shakespeare makes frequent mention of this fruit, and at that time, it was not only known, but widely cultivated. Two old herbals in my possession of near the same date give detailed descriptions of the varieties and cultivation of this berry.

From the fragrance of the fruit of the strawberry, Linneus gave the generic name *Fragaria*. In England, he says, one found these species, *Fragaria Vesca*, *Fragaria Monophylla*, and *Fragaria Elatior*. *Fragaria Collins* and *Fragaria Viride* were known on the European continent, and *Fragaria Indica*, farther east. On this side of the Atlantic were found *Fragaria Canadense*, *Fragaria Virginiana*, *Fragaria Grandiflora*, and *Fragaria Chilensis*. From a blending of these species or varieties, the kinds we have at present have all sprung.

The strawberry is a hardy plant. It grows in Sweden and Norway, and even in Lapland, and as far southward as the Mediterranean. In the Old World, it is found from Britain to China, and upon this continent, from Nova Scotia to Surinam and from Chili to Oregon. It may therefore be considered a cosmopolitan fruit. Some one has said that doubtless God could have made a better berry, but it is very certain that he never did.

President Scott—I notice that the President of the Society, Mr. Westwater, is here, and I will ask him to come forward and take the chair.

President Westwater took the chair thus resigned, and called for a paper by Mr. J. J. Janney. Mr. Janney then read his paper, which was as follows :

THE IMPROVEMENT OF THE STRAWBERRY DURING THE LAST THIRTY YEARS.

My first acquaintance with the strawberry was with a few diminutive specimens, growing among the gaps in the fence corners,

in the meadow, with rarely more than half a dozen very small berries on a stalk which got ripe one at a time. On rare occasions for a social picnic, a company would ride twelve or fifteen miles to the top of the Blue Ridge, where in a good season and under favorable circumstances, we would find patches of bitter berries, which, when fully ripe, were of excellent flavor.

But the cultivation of the strawberry was something I did not hear of until more than twenty-five years after that time. It is the improvement of the strawberry during the past thirty years that has been allotted to me for discussion to-day.

Thirty years ago, the only professional grower that the writer knew, or knew of, in this vicinity, was John Burr, who had a small lot on the south side of Mound street, near its intersection with East Public Lane, now Parsons Avenue. He had been engaged in the business several years, and had originated several good varieties, among them Burr's New Pine, which has been excelled by but few, and the Ohio Mammoth, which lacked color, and was therefore not popular.

Then, our market would furnish but a few bushels. It is believed that twenty bushels would have glutted it. Now, three dealers received of foreign berries, in one day of this week, six hundred bushels, and a fair estimate of the amount sold daily at this time, is four hundred and fifty bushels, two hundred and fifty foreign and two hundred home grown. In 1855 it was estimated that there were three thousand bushels sold in Cincinnati, which is but little, if any more than the sales in this city during the present week.

Then, the berries sold at retail at from seventy-five cents down to twenty-five, sometimes getting down to fifteen cents per quart for a common berry. The writer remembers that in his early housekeeping in this city, he could not indulge in strawberries often, for the reason that he could rarely get a good berry for less than twenty-five cents per quart, and he could not afford to pay that. Now the season opens with imported berries at twenty-five cents, but they drop to twelve or fifteen cents for the best berries, and with as abundant crops, as this season, come down to ten cents, or three quarts for a quarter.

Thirty years ago we had but one professional grower. Now there are not less than a dozen, not including small patches for home use, nor those of market gardeners who cultivate small areas in connection with vegetables.

The word "strawberry" does not occur in the index to the first twenty-five volumes of the *Journal of the Royal Agricultural Society*, ending with 1864; and in an article on Fruit

Culture in Ohio, in the Report of the Commissioner of Agriculture (or the Commissioner of Patents) for 1856, apples, peaches, cherries, pears, grapes, currants, and gooseberries are mentioned, but the writer seems never to have heard of the strawberry; and in the reports from the several States, but few of them mention it.

M. B. Bateham, in the *Ohio Cultivator* for July 1st, 1856, gives the following list of berries that had been tested at the Columbus Nursery:

Large Early Scarlet, Hovey's Seedling, Burr's New Pine, Ohio Mammoth, Iowa or Washington, McAvoy's Superior, Longworth's Prolific, Walker's Seedling, Moyamensing, Genesee, Monroe Scarlet, Orange, Prolific, Crimson Cone, Barry's Extra, Climax Scarlet, Jenny's Seedling, Hudson of Cincinnati, Dundee, (identical with Early Scarlet), Duc de Brabant, Merrilee, La Reine, British Queen, Briton Pine or Belle Blanch.

Mr. Bateham said, "If you have but two varieties, take large Early Scarlet and Burr's New Pine and for a third, Hovey's Seedling; and if you prefer great productiveness to large size, take Monroe Scarlet. If you want a more extensive list, add Longworth's Prolific, Genesee, McAvoy's Superior, and Moyamensing. For market, Large Early Scarlet, Walker's Seedling, Hovey's Seedling, Moyamensing, Crimson Cone, Jenny's Seedling, Prolific, Orange, and Monroe Scarlet.

In the report of the Commissioner of Agriculture before cited, for the year 1867, the following list is recommended for general cultivation:

Boston Pine, Hovey's Seedling, Large Early Scarlet, and the following new varieties, which promise well; Genesee, Hooker, Le-Baron, Longworth's Prolific, McAvoy's Superior, Scarlet Magnate, Troltopes, Victoria, Prolific, Walker's Seedling.

The *Encyclopedia Britannica*, under date of 1881, gives a list of twenty varieties most generally cultivated in England, and it is believed that in all these lists, not a single name is to be found in the eighty varieties named in the last report of the Ohio Agricultural Experiment Station, as now being cultivated.

The newer varieties must be better than the old in some respects, or they would not be adopted. It is presumed that one or more of the following reasons have been controlled in the displacement of one of the older sorts. The new have been found to be first, more prolific, producing more bushels per acre, either from the greater number of berries or from their greater size; or secondly, firmness or solidity of fruit, so as to bear

shipment; or thirdly, color. The last is an element of great importance in estimating the value of fruit of any kind. Father Springer used to tell an anecdote in illustration of this fact. He was a pioneer in fruit culture in the Muskingum Valley, and on one occasion took what he thought to be some very fine apples to Zanesville to market. A woman asked the price. "Twenty-five cents a bushel." "Twenty-five cents, why, I can buy red ones at that up there." A bright red fruit of any kind will sell readily, no matter what its quality. The taste and flavor of the strawberry has surely had less to do with its improvement than either of the reasons named. Some of the varieties that have remained popular longest have been undoubtedly not the best, so far as that for which we value the berry is concerned,—the taste. Take the Wilson as an illustration. An apple or a peach or a cherry, with the exact flavor or taste—for while it has a slight aroma, that disappears in the taste—as the Wilson, and it would be reported at any agricultural fair as good for pies, but not fit for the table. But it is a strawberry, and its family takes it with good company.

At Barnesville, the most noted center for strawberry culture in Ohio, the varieties most cultivated are, Cumberland Triumph, Sharpless, Crescent, Wilson and Manchester. To these, some add Mt. Vernon, Miner's Prolific, and Triumph de Grand.

Methods of cultivation have been greatly improved. In special cases, growers thirty years ago did produce as great crops as can hardly be excelled now. Wm. Storms in the Horticulturist reported that in 1855, John C. Youtcey, a Kentucky grower, grew on two acres of Marlinton, 60 bushels, which he sold for \$420; on five acres of Hovey, 178 bushels, which brought \$1,260; and on three acres of Hudson, 102 bushels, which brought \$530, making on ten acres 350 bushels, for which he got \$2,210. The expense of gathering was \$275, and marketing \$75. In 1877, H. Jerolaman, of Hilton, N. J., had from one acre of Seth Boyden 377 bushels and 15 half-quarts, for which he received \$1,386.21. In 1878, he received \$1,181, and in 1879, his poorest year, he had 120 bushels, for which he received \$728. The average cost of growing, marketing and manure was \$350 per acre.

The immense production of the present arises from the general diffusion of the knowledge in relation to the proper method of cultivation. Among the large, perhaps the largest, strawberry plantations is that of J. R. Young, Jr., near Norfolk, Virginia. He had in 1880, 250 acres planted, and expects to have 440.

The average size of the berries has been greatly increased. Among the older varieties there were some large ones, Burr's Ohio Mammoth, for instance; but the average was very much smaller than at present. Berries have been grown, thirty of which would make a quart, and the Ohio Experiment Station reports Sharpless as having attained a size of fifty-seven to the quart. No further increase in size is desirable, for it is without doubt, true that in fruits especially, great size is reached at the expense of flavor and fineness of structure. Propagators should look more to taste, and less to size.

This season will doubtless dampen the enthusiasm of many growers. Owing to the peculiar atmospheric conditions, berries from Chattanooga, Louisville, Southern Indiana, Cincinnati and Barnesville were all on our market at the same time. Some berries have been sold at the exact cost of freight. Growers must learn to grow only good berries, and put them on the market in good order.

We may well quote, when tasting the typical strawberry, the last lines of H. H.'s poem:

"I watch how all May has of sun
Makes haste to have thy ripeness done,
While all her nights let dew escape
To set and cool thy perfect shape.
Ah, fruit of fruits, no more I pause
To dream and seek thy hidden laws.
I stretch my hand, and dare to taste.
An instant of delicious waste,
One single feast, all things that went
To make thy empire thou hast spent."

President Westwater.—The next thing before the Society is a paper by Mrs. Lovejoy on Preserving Strawberries for Winter Use.

Mrs. Lovejoy's paper was as follows:

PRESERVING STRAWBERRIES FOR WINTER USE.

To successfully preserve strawberries for winter use is a difficult problem with many housekeepers. There need be no trouble, however, if precaution be taken.

The fruit should be fresh, the glass jars air tight, and kept in a cool dark closet, or wrapped in brown paper, as light is injurious to canned fruit, and especially to strawberries. The berries should be selected carefully, and all imperfect ones rejected. They are in the best condition to can when not quite fully ripe, and should be put up as soon as possible after picking. More care is required in canning strawberries than in any other fruit.

The following recipe for canning strawberries is given in some of the best works on fruit canning, and is used successfully by many housekeepers:

"For every quart of fresh strawberries, take one coffee cup of white sugar, add a tablespoon or two of water, to melt the sugar, boil ten minutes, then add the berries. Boil ten minutes, stirring carefully so as not to break the fruit. Can boiling hot and seal quickly. This amount will just fill a pint jar."

Another recipe taken from an old English work proves to be very successful. It is as follows:

"Take an equal weight of fruit and sugar. Lay the former in a large dish, and sprinkle half the sugar over. Give a gentle shake to the dish, that the sugar touch the under side of the fruit. Allow to stand 10 or 12 hours, and then make a thin syrup with the remainder of the sugar, and allow one pint of red currant juice to every three pounds of strawberries. In this, simmer them until sufficiently jellied. Choose the larger scarlets; not dead ripe."

Many other recipes might be given for canning strawberries, or preserving them for winter use, some of which have given very good results. There is one method of preserving which I believe to be preferable to all others. It would properly be called "Jellied Strawberries." The recipe is the result of many experiments by Mrs. Bruning, who not only gave me permission to make this public, but also sent a glass of fruit for examination. The recipe is as follows:

"Take equal quantities of well assorted, ripe, dry strawberries and granulated sugar. To one tumbler of sugar, add one gill of water. Put over the fire and cook until of the consistency of boiled icing, or until it taffies. Then add berries, and cook till the syrup leaves the spoon jellied."

Strawberries put up in this manner do not require air tight jars, but can be sealed as jelly, and will keep perfectly in a cool, dry place. The berries will retain their shape and natural flavor.

For jelly, strawberry juice is not a success; but when mixed with equal quantities of currant juice, makes an excellent jelly.

President Westwater—The next thing upon the program is the subject of

THE FERTILIZATION OF THE STRAWBERRY, by Prof. Lazenby.

Prof. Lazenby spoke as follows:

Mr. President, Ladies and Gentlemen—The strawberry, like our other plants, produces its flowers. Of course, this flower must have some object, and appears for some purpose. One object of the flower in all of our plants is for the perfection of the seed; and before the seed is perfected, and to aid in the perfection, we have the development of the fruit;

but I suppose the real object of the flower is the perfection of the seed. It is unnecessary for me to give you any detailed description of the strawberry blossom, but I simply wish to call your attention to this fact;—that in the flower in order to accomplish its end—the perfection of the seed, or the production of fruit—there must be a union of two different elements. That is, the flower produces stamens and a pistil. When the pollen from the stamens falls upon the stigmas of the pistil, is what is known as fertilization. As this part of the flower develops the other part of the flower, the showy part, is not needed and falls off. The ovary develops, and within that we have the seed. In the strawberry we have four distinct forms of inflorescence. In the first place, we have strawberries that bear flowers that have both stamens and pistil, or both of the essential organs; and such a flower we call a perfect flower; that is, we get from the flower, fruit and the seeds, as we do from any ordinary flowering plant. We have another form, however, which has only the stamens, no pistil. Of course, from this form of inflorescence we get no perfected seed, and no strawberry plant that has this character of a flower produces any fruit whatever. It simply has the pollen, which, of course, in itself produces no fruit and no seed. The third form of inflorescence in the strawberry is what is known as the pistillate form. They have the pistil, one of the two essential parts of the flower, but no stamens. Of course, from such a strawberry plant we would have no fruit by itself, but if we have by the side of the strawberry plant bearing blossoms of this character, some of the blossoms that bear the stamens, of which I have just spoken, then we have the union of these two essential parts, and this pistillate form produces its fruit. In practice, we have found that the pistillate plants, when they are planted in connection with the perfect flowering forms, are usually the most productive varieties, I suppose because we have in every instance a cross between two different plants. You know it is the saying of Darwin that Nature abhors what is known as self fertilization. Nature seems to have taken every precaution to keep the pollen of one flower from fertilizing the pistil in the same flower, but it is done sometimes. When we look abroad and see the bright flowers of our fields and observe the pleasant odor, we wonder what is the meaning of this color, these bright flowers or this pleasant odor. It is simply to attract insects. They will visit one flower and then another and another, and carry the pollen from one to another, and thus fertilize

them. I am more and more convinced that the strawberry is very largely dependent upon insects for its fertilization. When the strawberry is in bloom, if the weather is unfavorable for the flight of insects, if there are not many insects abroad, the strawberry will not be as well fertilized as it is if the conditions for insect life are more favorable.

There is another interesting peculiarity in the strawberry, and that is that the fruit—what we in popular language call the fruit—of the strawberry is not the fruit at all. In botanical language, what we see upon the fleshy edible part of the plant that we call the strawberry and term seeds, are the fruits of the strawberry, and what we call the fruit is simply an enlarged receptacle that bears these true botanical fruits. The strawberry produces, from one blossom, a large number of fruits, but we have in popular language but one fruit. It is the receptacle that becomes large and fleshy, and the interesting fact in connection with this is that this part does not develop, unless the fertilization of which I have spoken takes place.

Practical strawberry growers have been very much interested of late years in testing and studying the effect of planting different varieties of strawberries side by side, so as to see what the result would be if a cross is effected between certain varieties, and whether the pistillate varieties, like the Crescent, which have to be fertilized by some other variety, would undergo any change.

Mr. Green, of our Experiment Station, has conducted some very careful experiments, to throw, if possible, some light on this subject. It has a very practical bearing, because if, by planting the Charles Downing by the side of the Crescent, we can improve the Crescent, it is very much better to plant that particular variety with this pistillate sort; or if we can find a staminate sort that crossed with the Crescent in this way will improve its flavor, it is better to use that. You may want to know what is the result of some of these tests that we made here at the Experiment Station, and the answer would be that they tend to show that the influence of the pollen from any variety is something. It has a more or less marked influence upon the fruit. In some instances, that influence is so slight that in practice it would be overlooked. It has some influence on the shape of the berry, and perhaps on the color. You plant the Charles Downing variety by the side of the Crescent, and your Crescent strawberries are of a color somewhat approaching that of the Charles Downing. If you plant varieties like the Cumberland Triumph or the Sharpless by the side of the

Crescent, you miss something of this bright glossy color. In these minor points, perhaps, the different varieties of strawberries have their effect. When the question is put to you whether the pistillate form or variety is changed in character by the varieties that are planted by the side of it, the only safe answer is that you don't know. I might say here that this is a pretty good answer to many questions. The Professor of Greek at Harvard was one day hearing a class in Greek history, and he asked in reference to what became of the bodies of the soldiers that were killed in a certain battle. He asked the first student, "What became of the bodies of those soldiers after this battle?" The student very naturally said, "They were buried." "No," said the Professor, "that's not right. Next." The next student thought a minute and said, "They were burned." "Not right. Next." The next one thought there would be only one thing left to do, so he said, "They were cast into the sea." "No, that's not right. Next. What became of the bodies after this battle?" The last one thought they had got about to the end of the string, as far as disposing of dead bodies was concerned, and so he said, "I don't know." "That's right. That's perfectly right," said the Professor, "nobody knows." Now, that is a pretty good answer to many of these knotty problems in horticulture, and especially those in regard to the actual effects of cross-fertilization.

Dr. Jones—Professor, I would like to ask one question. You say that the pistillate varieties are more productive than the self-fertilizing?

Professor Lazenby—I think our most productive varieties, if they are properly fertilized by others, are the pistillate sorts.

Dr. Jones—Another question. You take the Charles Downing and plant it by the side of the Crescent. Your idea is to give beauty to the berry, not to produce excessive fruit.

Professor Lazenby—No, sir, that doesn't appear to make a very great difference. It is well to use a variety that produces a large amount of pollen. There are some varieties that do not appear to produce very much pollen. It certainly is necessary to use some variety for fertilization. We have settled this fact beyond a doubt by simply covering plants very carefully in such a way that their growth is not interfered with, so as to prevent insects from entering and prevent pollen coming from outside, and no fruit at all was produced. This explains why many people have procured pistillate sorts of strawberries and produced no fruit. They fail to

get a staminate or perfect variety to fertilize them. A few years ago that was a not uncommon occurrence, and in fact, I received a letter a few weeks ago, from a gentleman who stated that after five years trial he had at last succeeded in raising strawberries, and then he went on to say that he had just learned that with pistillate varieties alone he could get no fruit.

The next in order is

STRAWBERRY CULTURE IN THE HOME GARDEN,

by O. W. Aldrich.

Mr. Aldrich's remarks were as follows:

Mr. President: A few days ago, I met a young gentleman who has been engaged in market gardening for some time, and is twenty-six years of age, and he says he has never tasted asparagus. I presume you would not find a man, or perhaps a woman, of that age in this county that would say they had never tasted a strawberry; but I presume if you should question the people to find out what proportion of them in this county have tasted a strawberry of their own raising, a very large proportion would be compelled to say they had never tasted a strawberry of that kind.

It seems that people have an idea that it is a matter of very great difficulty to raise a strawberry, and they fail to plant and cultivate for their own use. There are two kinds of gardens, those in the country and gardens in the city, and the methods of cultivation in the gardens in the two places would vary very materially. Those who have large gardens can raise the strawberry about as easily as any vegetable by planting in rows, and raising them just as market gardeners raise them for market. It is little more difficult to raise a fair crop than it is to raise an ordinary crop of garden vegetables. But perhaps the scope of the remarks that I was expected to make would be rather more confined to the small garden of a place in town or village, where there is but a small amount of ground. Wherever the small garden, it seems to me much more desirable to put that small amount of ground into small fruit than to put the same ground into vegetables. I had a small lot when I lived in town. Upon that ground I had all the strawberries I could use in my family and to give away to my neighbors. I think it is much nicer to go out and buy what vegetables you want than to buy your fruit. It was the same way with other kinds of fruits. I had all we wanted to use in the family.

When one has but a small portion of ground in strawberries, I think that one can set them much closer than is generally practiced

and obtain good results. My father was very successful in my boyhood days in raising strawberries and small fruits on small plots of ground in great quantities. I will give you something of the methods of culture that I think will be successful, and then name some of the varieties.

In the first place, of course, in the garden, when you have the strawberries close together, the ground should be very rich. I would have part of the ground trenched, and I would fertilize the ground very thoroughly with an amount for most varieties of strawberries that would be counted large, and use as much stable manure as could well be obtained—on a bed of fifteen feet by twenty-five or thirty, two or three or four wagon loads—and thoroughly mixed with the soil to the depth of ten or fifteen inches. Then I would set out the plants in rows fifteen inches apart and I would put the plants in the row as close as eight inches apart. This is much closer than would generally be done, but I believe in well cultivated ground, it is better than if they have so much ground. In regard to setting them out, I would say that one great secret is in not setting them too deep. If you set them too deep, and there comes a heavy rain, it will cover the crown and you will lose a good many of your plants. Set them only so that the crown will remain above the surface of the ground. If one has a henry, there is no better place to deposit the cleanings than upon the strawberry beds. And if in the fall, when you want to clean up for the winter, and before you mulch the berries, you will take your coal ashes and put on them, you will find it very good. The pile of ashes has been lying all summer, and if all the slops of every kind from the house are thrown on the pile, you have a fertilizer that can hardly be excelled for the strawberry. A little bone dust also adds materially.

In regard to the varieties to be set. We have a bed, we will say, thirty feet long, and fifteen in width, twelve rows, and forty plants in a row. If you want big berries and lots of them, it would be necessary to use two sorts of berries, and as beginners are always discouraged if they do not get a good quantity of fruit, I would take a number of varieties, and then if I had friends who were experts in the taste of berries, I would set out some varieties that would meet that demand. I would also set out some of the varieties that would meet the requirements in size of those who like big berries, but are not so particular as to taste. Then I would have big berries, and lots of them, and good berries. At one end of this patch, I would

set eight rows of Crescent. If this is properly fertilized with other varieties and the ground enriched enough, it will yield at the rate of several hundred bushels to the acre. When you want lots of berries, you want to set out the Crescent. Then by the side of these, I would place two staminate varieties. So far as I have learned, a comparatively new variety called the May King would be a very desirable variety to fertilize this with. It is a seedling of the Crescent, itself perfect flowering, and better in quality, and said to be very productive. Upon the other side I would place another comparatively new variety which is of excellent quality. I found one berry weighing very nearly an ounce, and all the berries are of a very fair size and of very good quality, being one of the best large berries that I have ever tasted. That would give me my big variety, and I should expect to have berries big enough to astonish my friends who like big berries. This variety is the Parry. In a part of the other eight rows, I would like the variety Windsor Chief or the Champion. That would be what might be called a medium variety. This also is one of the kind of pistillate varieties, and requires fertilization. Upon one side of that I would place a berry that is a beautiful berry and of good quality, the Cumberland. Upon the other side of that, I would put the Sharpless, in order to get some berries for my friends who liked big berries. They will raise the largest berries of any you can get, and when well ripened, of fair quality but not very productive in this locality. For the third part of the patch—I would divide it into three equal parts, putting four rows of each kind. For the rest, I would take a variety that upon my grounds is fairly productive, and the berries are very nearly equal in size to the Sharpless, and of very fair quality—the Jersey Queen. Upon one side of that I would place the Sucker State, and upon the other, what is perhaps the least of all the varieties in ordinary cultivation, the Kentucky. This berry is of fair productiveness.

With these kinds of berries, I should expect the very finest berries from the beginning of the season until the end of it. I would have all that a family of eight persons could use, and supply their friends for several suppers and dinners besides. I should expect to get five or six bushels of fruit.

The report of Mr. W. J. Green on new varieties was then called for, but he stated that he was not quite prepared to report, but made his report later in writing, which is as follows:

NEW VARIETIES OF STRAWBERRIES.

The strawberry has become such a popular fruit that almost every grower is constantly watchful for varieties that are superior to those he is cultivating. A prime essential to success in the business is a good variety. Even a slight improvement in color, texture, quality or productiveness is enough to warrant a grower in discarding an old sort and planting a new one in its place. The mere fact that people are willing and anxious to try new varieties and to pay good prices for plants, warrants the propagation and dissemination of new varieties. It is so very easy to supply this demand, and withal such an enchanting occupation to sow the seed and watch the results as a bed of seedlings come into bearing that thousands are tempted to experiment in this direction. It is not difficult to select from a bed of seedlings a variety that has some merit, and the fact that the merits alone are considered, and the failings overlooked, is an explanation of the fact that so many sorts are tried for a time and then discarded. A variety must have unusual merit to remain in cultivation for any length of time. Of the newer sorts, it is safe to say that nearly all have some merits, and perhaps all, or nearly all, have some serious weaknesses. Hence, it is a matter of doubt if more than two or three of the recent introductions will survive more than a few seasons' trial.

A promising sort is the May King. A good reason for believing that it will be retained for some time is that its flowers are perfect and it is an early bloomer. Hence, it is a good companion for the Crescent, now a very popular sort. It seems not to be so productive as the Crescent, but the plants are nearly as vigorous, and the fruit somewhat finer in appearance.

The Jewell is another sort likely to retain its popularity. The fruit is large and fine, and the plants healthy and productive.

The Parry is another sort of considerable merit.

The Ontario possesses the merits of vigor, large fruit, and extra quality. The above named sorts have been on trial sufficiently long to have been tested quite thoroughly, but probably not fully. They may have some serious faults, but it is not possible at present to name them, hence they must still pass as varieties worthy of further trial.

The following sorts, for the reasons given, will doubtless soon be discarded:

Henderson, lack of vigor and productiveness; Garretson, lack of vigor and subject to rust; Daisy Miller, small inferior fruit; Indiana, unproductive.

The committee, consisting of O. W. Aldrich and W. J. Green, from this Society, with the aid of Mr. Smith, Superintendent of the Horticultural Department of the Ohio Reform Farm, inspected a number of seedlings on trial at the Experiment Station, and found the following worthy of mention :

Covill's Early, a very early sort, fruit medium size, dark, firm, and fair quality. It is recommended because of its earliness, being several days in advance of the Crescent. Another variety called the Nameless was found to be about as early and of superior quality. It seems to be especially fitted as an early market sort, also good for home use. Jessie and Excelsior both appear to be desirable sorts, because of the large size and fine appearance of the fruit. They resemble each other, although not identical. The berries of the former average somewhat larger in size than the latter. Amateur was found to be very productive, and the plants vigorous and healthy. The fruit resembles that of the Cumberland in appearance, but is not so large. Queen of the Peninsula was thought to be a desirable market sort, the fruit being large and firm, while the plants are healthy and productive. Mammoth Beauty was also thought to be worthy, because of the large fruit and good quality. The Lida and Buebach's No. 5 were thought to be desirable and worthy of general trial. Woodruff No. 1 resembles the Wilson, both in foliage and in fruit. As the plants are much more healthy and vigorous than that well known variety, it seems to be well worthy of extended trial. Several other sorts were inspected, but as some showed but little fruit, no report could be given.

President Westwater—Before we adjourn, I would say that here are some preserved strawberries for your examination. Your opinion is desired as to their quality. The next thing after that will be the supper at five o'clock. I believe that is a committee of the whole.

The Society then adjourned to Horticultural Hall, where the cloth was spread for a hundred, and all the places were filled. "Strawberries and cream" was the dish of the occasion, and the fine berries and pure cream were appreciated by all.

Upon a table at one end of the hall was the strawberry show. The following varieties were shown by Mr. O. W. Aldrich: Crescent, Cumberland, Jersey Queen, Mt. Vernon, Sucker State, and Windsor Chief.

Mr. W. J. Green showed the following varieties, grown at the Experiment Station: Sucker State, Miner's Prolific, Norman, Jersey Queen, Champion, Wilson, Atlantic, Old Iron Clad, Sharpless, Manchester, Daniel Boone, Kentucky, Ohio, Bidwell, Crescent, Cumberland, Downing, Piper's Seedling Gypsy, Endicott, Finch, Pautuxet, Lacon, Woodward, Cornelia, Early Canada, Mt. Vernon, Prince of Pewies, Photo, Oliver Goldsmith, Capt. Jack, Parry, May King, Jewel, Columbus Wilson, Crawford's No. 6, Hart's Minnesota, Alpha, Red Jacket, and several others.

After a short time spent socially, the Society adjourned.

J. M. WESTWATER,
President.

W. S. DEVOL,
Secretary.



Columbus Horticultural Society.

BOARD OF TRADE ROOM,
COLUMBUS, OHIO, June 26, 1886. }

The Society was called to order at 3:30 P. M., by President Westwater.

The Secretary—Mr. President, the minutes of our last regular meeting were taken verbatim, and have been printed. The reports are there on the table, and I suppose all the members have seen them. I think it will not be necessary for me to read them. If any one has corrections to offer, they will be accepted.

No corrections being offered, on motion, the reading of the minutes was dispensed with.

President—The next business in order is unfinished business. Anything under this, Mr. Secretary?

Secretary—No sir.

President—The next business is the reports of special committees.

Mr. Devol—I believe I was appointed Chairman of the Committee on Programs. The general subject selected for discussion at our next meeting is "Shade Trees," and the particular topics are as follows:

Our Forest Trees as Shade Trees, Horace Wilson.

The Ideal Shade Tree for the Suburban Lawn, Henry C. Noble.

Fruit Trees on the Lawn, J. M. Westwater. I think our President should not be exempt from all opportunities of presenting ideas on the subjects discussed at our meetings.

President—What is your pleasure with the report that has just been read?

On motion of Prof. Lazenby, the program was adopted as read.

President—Reports of Standing Committees is next in order. Committee on Entomology. Prof. Lazenby, will you tell us about this insect in the raspberry stems brought in?

Prof. Lazenby—I might say in regard to this specimen that has been brought in, probably you are all aware that it is an insect quite destructive to raspberries in some sections. This is evidently the work of the Snowy White Cricket, or Snowy Tree Cricket. The Crickets and Katy-Dids have a peculiar habit of depositing their eggs in continuous lines. Perhaps you have all seen the eggs of the Katy-Did. They are generally on the outside, not deposited within the stem as these of the Cricket are, but in something the same manner. This Snowy Cricket prefers

the canes of the raspberry for its eggs, to the twigs of other shrubs or trees. The long, slender eggs are deposited in a long, close, compact row, an inch or more in length. The injury is done by the insect eating its way in, or it does not exactly eat, but the ovipositor reaches clear into the center of the cane. The effect is not seen for some little time, but the plant is, of course, very much weakened. The injury does not generally amount to very much, but sometimes the stem is killed entirely. The insect has a very bad habit of cutting off leaves in summer, and sometimes extends its mischievous work to the grape-vine, trimming off both leaves and fruit. I might say in regard to this class of insects—Crickets, Katy-Dids and Grasshoppers, for they all belong to the same class—that they differ from other classes of insects in that they do not go through a complete metamorphosis; that is, a complete set of stages of insect life. The stages are not so distinct as in other classes of insects. The small Grasshopper is very much like the large one. The chief difference is in size. It does not have this distinctive larva or grub form. The Cricket is the same. It comes out of the egg a very small Cricket indeed, but it grows and in time deposits its eggs.

Member—What time does it deposit its eggs?

Answer—Late in the summer. I suppose the time varies somewhat with the season, but it is quite late in the summer. Destroying the eggs is the only way thus far known, of fighting this insect.

Mr. Aldrich—A month or two ago, I found on the young raspberries a new worm which I never noticed before. It is something similar to the rose worm. It works upon the plants and stitches the leaves together and forms a shelter for itself. It does not seem to be very injurious to the plants.

Prof. Lazenby stated that this was something new that had just been noticed upon raspberries, and that he did not know what it was.

The report of the Committee on Fruits was then called for, but Mr. Green, who is chairman of this committee was absent.

Mr. Aldrich—At the commencement of the year, in planning the work of the committee, Mr. Green asked me to look after the small fruit of our section. I believe Mr. Mitchell, the other member of the committee is present.

I can say what I know of the fruit in our vicinity.

The strawberry season is now almost over. A few of the late varieties are still bearing. I found a few rows of Mt. Vernon and Windsor Chief that were still bearing some. I lay that, however, to that fact that they were very heavily mulched in the early part of the winter, and the mulch was not removed at all. The straw was left on, and the vines grew up through the straw. They are still producing quite a good yield of nice berries. I don't know but for home purposes, and even for market, it may pay to mulch our berries heavily in that way and not remove the mulch, so as to produce late berries.

Raspberries and blackberries in our part of the county are a very good crop. I think, however, that the average size of the black raspberries is hardly equal to that of last year. There may be some plantations where the average will be as good. The red raspberries, especially the Turners, are found to be very full of fine fruit and of a very good quality and good size. I don't know that I ever saw nicer berries than I have upon my own ground this year. The other red berries are not raised very extensively with us. The blackberries are well started and very full. I find that my Lawtons have set very full of fruit.

The grapes have set exceedingly full, but I am sorry to say that they have been attacked by rot, although the berries are still quite small. Unless something can be done to arrest it, in all probability, it will be very destructive. Probably you have seen the remedy given by Mr. Miller, of New Philadelphia, a member of the State Society and an enthusiastic horticulturist. He told me that some years ago, his vineyard had become almost worthless, the grapes rotted so badly. Something induced him to try an experiment. He went out and sowed copperas very thickly under the vines. Within three days, the rot was entirely arrested, and he saw no more of it through that season. He has had no rot whatever on his vines, when in his neighbor's garden just over the fence they rotted badly.

That is all I have, I believe, from our part of the county.

Mr. Mitchell was then called upon.

Mr. Mitchell—Mr. President, I have not had time to get up a paper, and I could not get my mind into such a fix that I could do anything of that kind. We had quite a crop of berries down there, and if I understand what was required of me, I was to speak about market strawberries.

If I were to raise strawberries to make the

most out of them that I could, I would take the Crescent. We have about eight acres, and harvested nearly seven hundred bushels.

The Charles Downing and the Kentucky.

He spoke about the mulch. We leave the mulch on principally. There are a good many strawberries that will ripen later. We want to get the plow into the ground just as quick as we can. We are losing time now when we ought to be plowing.

Of raspberries, we have the Bristol. It seems to be ripening prematurely. I don't know why that is. It seems that the Tyler, and the Ohio, and the Doolittle all ripen at once. That was a good deal the case with strawberries. They all seemed to want to ripen at once. The Crescent, however, was pretty well ripened before the rest came on, and our crop of this variety was fair. It seems to me that if we take different varieties and work them in to fertilize the Crescent so that when one fails another will come on and take its place, the Crescent will prove about the earliest of any and the latest.

Member—You market your fruit here in the city?

Answer—Yes, sir, about all in Columbus. There were a few bushels that went South. Very little, however.

Member—How did the prices this year compare with those of last?

Answer—I don't think the prices were as high. Very near it, too, part of the time. The prices were about the same as last year. Toward the last they run down.

President—Communications and correspondence is next in order.

Secretary—Mr. Janney handed me a letter in regard to fertilizers. A firm in the east wishes to secure an agency here. I don't know whether it should properly be placed before the Society or not.

President—Where are they located?

Mr. Devol—At New York. I have also received a postal from Mr. C. L. Clarke, who says that he has never been a member of the Society, has never attended its meetings, has sent this notice to the Secretary annually, and asks that his name be removed from the roll.

Mr. Janney—He was regularly elected a member. I don't know anything about it except that I told him the last time he sent such a notice that he had been regularly elected, as shown by the minutes. On motion Mr. Clark name was erased from the roll.

Mr. Devol—Mr. President—In this connection, I would like to state that I have sent a second notice to those who are in arrears to the Society, and in case they do not respond by their presence or by paying their dues or by signifying their intention of remaining

members of the Society, I wish to ask the privilege of telling them next time that their name will be taken off of the roll at the next meeting of the Society.

Mr. Janney—I will suggest that the Secretary keep a memorandum of the names of those who do not express their intention of remaining members, and report the names, and let the Society act upon them at the next meeting.

Mr. Devol—I simply made this statement because I wished authority to tell them that their names will be dropped at the next meeting. We are sending notices of the meetings and the proceedings of the meetings to a large number, which costs us several cents for each member for each meeting, and it is an unnecessary expense to the Society.

Mr. Brotherton was then called upon for remarks concerning small fruits in his neighborhood.

Mr. Brotherton—I haven't much to say. I have between three and four acres of strawberries, and six acres of black cap raspberries. The raspberries are just coming into bearing. They did pretty well this year. We have a fair crop of the Gregg in pretty good bearing. The Ohio I have, also black cap, is doing very well. It is quite hardy. The Doolittle is an earlier black cap. It is also doing very well. The objection I have to it is that it is a little liable to rust. Of red varieties I have the Cuthbert, and Turner, and Reliance. All three of these I like extremely well. The Cuthbert is not very hardy. It stood the winter last winter, however, remarkably well.

Of strawberries, the principal one that I grow is the Crescent. It is more prolific than any other. It gives larger returns to the acre than any other. The Charles Downing I use largely to fertilize with, also the Cumberland Triumph, both of which I think I will reject hereafter and use the Sharpless. I have some of the Kentucky—three or four hundred plants. They are still bearing, and I think that if they bear every year as they did this year, they will be extremely profitable, because the first and the last berry bring the best prices. I think the Kentucky can be made to succeed.

Member—Have you any Wilson Albanys? Answer—I had some last year, but they rusted so badly I plowed them up.

Member—What variety would you recommend for the purpose of prolonging the season?

Mr. Brotherton—I would recommend the Crescent. It lasts as long as any other. The last berries, of course, are smaller. I should say, for an early berry, the Crescent, and to fertilize

it I should use the Sharpless, or the Triumph, or the Jersey Queen. The Sharpless are a medium berry. For a late variety, I should use the Kentucky, and I think I should get some Ohio. They are very high, however. They are to be offered for sale the first time this year. It is very late. It is a seedling of the Kentucky, and promises to be better. I should plant the Kentucky anyhow for a late variety. It is pretty well tried in most sections.

Member—Do you find the Kentucky to rust much on your ground?

Mr. Brotherton—They haven't thus far. They have a little, but not enough to injure the crop to any extent.

President—Any other remarks upon the subject?

Prof. Lazenby—I might say that we have two new varieties sent to the Station that are very early seedlings from the northern part of the State, one from Mr. Crawford, and one from Mr. Farnsworth. They are certainly earlier than any other berry we have.

Member—Earlier than the Crescent?

Prof. Lazenby—Yes, sir. Of the known sorts—tested varieties—the Crescent is about as early as any.

Member—What are the names of these berries?

Prof. Lazenby—They are not named. They are known only by number.

President—As it is yet early, we will hear any other member that may have something to say on the subject. If there is nothing more, I believe Dr. Townshend is to read us an address on Gardening as a Fine Art.

Dr. Townshend—The Secretary told me he had found no one to give an address this afternoon, so I said I would bring down an address I once delivered before the State Society at Akron. It is an old sermon, because it is in a printed book. I tried to find the manuscript of it, but could not.

Dr. Townshend's address was as follows:

The arts of life are classified as useful arts and fine arts. Those that supply our most pressing material wants—such as the arts for preparing food, clothing and shelter—are called useful arts. Those that supply the demands of our æsthetic nature, that awaken pleasurable and elevating emotions, enriching life, not on the material, but on the spiritual side—such as sculpture, painting, music, poetry, oratory, architecture, and what is known as ornamental gardening—are called fine arts.

Sculpture seizes on the beautiful or noble, in the form of objects, and prevents its loss by transferring the forms to marble, thus making the beauty almost eternal, and saving

the delight of one day to be a joy to other ages and nations.

Painting, in addition to the beautiful in form, represents also the beautiful in coloring. It does even more, for it takes the stirring events of history and represents them upon canvas so as to delight and inspire men of other times. Whose life has not attained a higher level as he looked on paintings of the Signing of Magna Charta at Runymede, or of the Landing of the Pilgrims at Plymouth?

Music, that in this noisy, jarring world eliminates harsh and discordant sounds, and combines the sweeter tones into delightful melodies and harmonies, renders us immeasurable service. No wonder the Orphic legend represented rocks, and trees, and wild beasts and savage men as brought into concord and thoroughly tamed by the sound of the lyre.

Poetry has been called the language of the imagination, or, by some, the language of the feelings. Whatever its true definition, we know that it serves to chrysalize the expression of our best thoughts and sweetest and holiest affections into beautiful forms, that we would not, and often cannot, forget. Poetry preserves the record of whatever of the past is worth remembering. Only what can inspire a song is worthy to live forever.

Oratory so stirs men's blood that life and spirit are intensified immensely. Even the stupid and unfeeling have been roused into new life by this enchanter's wand, and moved to sympathy and unwonted activity.

Architecture began with man's need of shelter, but it grew with his growth and strengthened with his strength, until it served to give expression to the sublimest of his conceptions and the loftiest of his aspirations.

How the house-builder becomes an artist, perhaps an incident will show: I once called with a friend at a pleasant home in the vicinity of Boston. In the parlor where we sat were some fine paintings, which I greatly admired. Our host, noticing this interest, said he would be happy to show us a real Claude, if we would excuse him a moment to arrange the light. Soon he led us to a chamber and placed us in position; then he drew a curtain from before a landscape of most marvelous beauty. The arrangement of light was perfect, the frame of the picture was deep and elegant, and everything, indeed, showed that the Claude was fully appreciated. We could only wonder and admire; but while we gazed, a steamboat came puffing its way right into the picture and dispelled the illusion, for illusion it was. In fact, a window had been so planned and placed as to command a view of Boston harbor in the distance, and of several beautiful suburban residences, in the fore-

ground. On the inside of the room, this window was set in a beautiful frame, so that on removing the window, the effect was to give the impression of an elaborate and exquisite painting. In short, whoever planned that window was an artist.

Now of gardening. The word garden comes from "girt in," and implies an enclosure. Gardening as an art aims to make this enclosure a source of profit not only, but also a source of pleasure; and this it does in virtue of the fact that it is both an imitative and a creative art. The earth is dotted here and there with spots of uncommon beauty, such as induce us to leave our homes for months and years and wander far to see. The gardener's art reproduces these gems and sets them down at our very doors. At other times, the gardener uses nature's elements—rock and soil, tree and shrub, flower and green grass, spring and brook, cascade and lake, and light and shade—and brings them into new and beautiful combinations, producing the most charming effects. Ornamental gardening and the other fine arts have this in common; they bring us continually into the presence of what is best and most beautiful, and so contribute to refine and elevate and bless our lives.

But if gardening as one of the fine arts is capable of doing so much for us, why is it, it may be asked, that it actually does so little? There may be many reasons for this failure. One or two of them I will venture to notice.

In the first place, attempts to beautify the surroundings of a home are often too vague and general, like that Missouri indictment which, instead of charging upon a prisoner some specific offense, indicted him for "kicking up a fuss generally." Mere generalities are of little account in criminal jurisprudence, and they are of no more account in art. It is of little avail that a man has a general purpose to beautify his home, if he can think of no specific effect or impression which he wishes to make. An indefinite and merely general purpose is likely to lead to a most incongruous and disagreeable admixture.

Perhaps I can illustrate this by what Mr. Lincoln would have called a little story. For a time, I lived where a particular kind of pie was in great request among working people. I am not well versed in pie-making mysteries, but I remember some of its features. It was baked in a deep dish, the bottom and sides were lined with a good crust, then the dish was filled with pieces of fat pork, sliced potatoes, sour apples, onions and bits of paste, with whatever of condiments were supposed to be needed, and over all another crust. On one occasion, an old gentleman

was offered some of this pie, which he declined, saying to the lady, "Madam, I know you are a good cook and have the best of materials, any of which I should be happy to partake of separately; but when you have added to the greasiness of your pork the acidity of your apples, the pungency of your onions, and the sogginess of your dough, you have a compound fit only for the devil." So of the confusion that comes from attempts to beautify by taking a bit of this and a bit of that, all good in themselves, but incongruous in reference to each other. A specific aim and simplicity in its realization would obviate a large class of failures.

Another cause of failure comes from the fact that proprietors attempt too much for the size of their places. It is said that an old soldier was put under arrest for drunkenness. This was when a common soldier's pay was less than it is at present. When asked what he could say for himself, he replied, "Gentlemen, do you expect to get all the cardinal virtues for seven dollars a month?" If it could be understood that all the beauties cannot be crowded into thirty feet front, much waste of labor might be avoided, and the gardener's art saved from reproach.

Still another cause of failure is the adoption of plans of ornamentation which are not in harmony with the situation and surroundings. What else can we think of. Rock work, rugged fountains, winding ways, and scraps of the wild and romantic dropped on nicely graded grass plots in crowded cities.

But worse than all I have mentioned is the fact that so many make no attempt whatever to beautify the home. In many cases, this is because people think it is impossible to make a humble home look pleasing. But let it be understood that beauty or elegance is not the exclusive source of pleasurable impressions; much that comes short of either may be really agreeable. The simplest, lowliest and poorest shanty ever built for the abode of human beings ought to make the impression of neatness by the careful removal of whatever could give offense, and the addition of a cleanly way of ingress and egress. Houses that can not be made beautiful may still be made to impress one as tidy, snug, comfortable, convenient or homelike, and all of these are agreeable impressions; so that gardening in the sense of improving the enclosure, is as well adapted to the cottage as to the palace. It is, indeed, universal in its application and benefits.

In conclusion, let me inquire how we may increase the interest in ornamental gardening. The readiest answer, perhaps, will be "by setting a good example." This is well, but

not sufficient. It will be remembered that one went about casting out devils, but he was misunderstood, and people said the wonders were wrought through collusion with Beelzebub. Good example needs to be interpreted by good teaching; so it must be in this case in order that the purposes and benefits of all artistic culture may be better understood.

This Society is, doubtless, having a most notable influence in the encouragement of ornamental as well as profitable gardening. Many of its members have devoted time and strength unsparingly, and given line upon line and precept upon precept. I suppose the exhortation applies to such: "Be not weary in well doing; in due time we shall reap, if we faint not."

Finally, I think the more thoroughly the vegetable kingdom is studied, the more it will appear full of wonder and beauty; to some, I presume, the opening up of its mysteries would seem like the discovery of a new world. It is said that Alexander the Great wept because there was not another world for him to conquer. Had Alexander obtained an insight of the science of botany, as it now invites our study, he should rather have wept in view of a kingdom far too vast for any man to conquer.

Mr. Janney stated that an insect has been destroying the Hollyhocks, and asked for information concerning it.

President—Professor Lazenby, can you give us anything about it?

Prof. Lazenby—No, sir, that is an insect I know nothing about. There will be no trouble in finding out what it is, however, by taking some of them and breeding, as we call it, keeping them in jars in earth, and passing them through the different stages. Then you can tell what they are. It takes a very expert entomologist to determine the species of any new insect in the larva form. Mr. Alwood at the Station, who is now our entomologist, would be very glad to get new specimens. If any one has any insects they wish information upon, if they will send them to him, he will be very glad to receive them. If you send them, put them in a tin box, as tight as you can make it. A great many make a great mistake—they think insects should be sent in boxes where there is ventilation. The tighter the box the better. Put in of course, some of the food plant which the insect feeds upon. Put them in a perfectly tight box and put them in the Post office, and they will come all right.

Branches of the chestnut bearing flowers were shown, concerning which Prof. Lazenby said: This specimen is rather interesting to those of us who live here in this part of the

state, although in many parts of the state, it grows very abundantly. The chestnut is quite a handsome tree, worthy of a place upon the lawn. It is, you know, closely related to the oak, and has something the same habit. It is rather a difficult tree to transplant. The best plan in growing the tree is to start the chestnut in small flower pots, and just as soon as they are started, place them where you expect your trees to grow. You can, by taking a great deal of pains, remove the tree after it is two or three years old. We have quite a number of small trees growing now upon the University Farm, some of which, I hope, will, in years to come, be as handsome as this tree. They seem to prefer rather light, gravelly, sandy soil, along the banks of streams. I have noticed that about Lancaster and Sugar Grove they seem to do well.

Dr. Townshend—Let me state in regard to the chestnut, that it grows only upon sandy ridges, and not upon low ground. Fifty or sixty years ago, I spent a good deal of time cutting down and making rails of chestnut trees. I have seen some trees that when they lay down on the ground, I could not look over them. They grew only on sandy ridges, particularly along the ridges that run parallel with the shore of the Lake. Our chestnut is extremely small and sweet, but you know that there are a dozen other varieties of chestnuts, some bearing very much larger fruit, less agreeable to eat, but better answering the purposes of food when dried. I suppose that everybody has heard that the Spaniards grind their chestnuts and make bread of them.

Mr. Devol—I was just going to remark in regard to chestnuts, that I am familiar with only a few trees in this state, and they are all upon sandy and very gravelly bluffs along the river. I have seen more of them in West Virginia than in this state, and they are all on gravelly bluffs in dry places.

Mr. Parsons—In New England the chestnut is very common, and there it is found not only on the high ground, but in the swales largely, but the swales there are equally as sandy as the woody heights here. The Professor telling of that big log, reminded me of a little incident. When I was quite a small boy, they were taking the chestnut timber from the hills near my home, and in order to get the logs to the bottom of the hill, would cut them down and roll them down. There was a gentleman who had a very indolent son. He finally sent him to college, but he made a miserable failure. He would do nothing for himself, and nothing for his father. His father thought he would make him do some-

thing, so he took him up on the hill and thought he would make him help roll the logs down. Men with heavy levers would lift them and roll them, and away they would go to the bottom. There was one very large hollow one. This youngster went and crawled into it, and the working men, anxious to do as much as they could, started it down the hill, not knowing that the boy was inside. Over and over went the log, with the young man that wouldn't work in it screaming at the top of his voice. Of course he landed at the bottom of the hill. The log was uninjured, but the boy was thoroughly stirred up and his temper very much riled. His father used to say afterward that Johnny was a good natured boy, but that ride rather got the best of his good disposition, for every time the log turned over, he believed upon his soul, that he halloed at the top of his voice, "Darn father, darn father."

Mr. Janney—One peculiarity of the chestnut is the rapidity with which it springs up from the roots, when cut down. I once knew of a saw mill that was built by a company that bought a large tract of chestnut timber. The timber of that tract of land, they thought, would justify the erection of a mill. They commenced on one side to clear it, and by the time they had got over to the other side, they had more timber where they started than when they first commenced, because every one that is cut down sprouts up again. They had considerable more than when they commenced, and so they kept on going from one side of the tract to the other, and probably are still sawing there.

President—Mr. Secretary, will you now bring forward your miscellaneous business?

Secretary—Mr. Wilson says that Mr. Clifford H. Wilson is deceased, and wishes his name removed from the roll, and Mr. McLea Wilson removed from the city two years ago, and also wishes his name removed from the roll.

President—If there are no objections, the request will be complied with, and the Secretary may remove the names.

The following bills were read and ordered paid:

DEWITT C. JONES, P. M.,	CR.
May 31st. Postage stamps	\$2 00
June 26th. do.	3 50
	\$5.50

EMMA OVIATT	CR.
June 26th. By reporting two meetings of Society at \$4.00 each....	\$8 00

The following sums were received :

June 26.	Eliza B. Kimball, Dues for '83 and '84.....	\$2 00
"	W. J. Green, Membership and Dues for '86.....	2 00
"	J. K. Jones, Dues for '85 and '86.....	1 00
"	C. J. Hardy, Dues for '86... and '86.....	50
"	J. B. Mitchell, Dues for '85 and '86.....	1 00
"	W. Brotherton, Membeship and Dues for '86.....	1 50
"	J. L. Stelzig, Dues for '86 and '87.....	1 00
"	N. S. Townshend, Dues for '86.....	50
"	C. W. Critchfield, Dues for '86	50
		<hr/>
		\$10 00

President—Any other business before the Society?

Mr. Devol — I will state that I expected and had the promise of our report of the strawberry meeting, for distribution at this meeting of the Society, and I was at the printer's office this forenoon in order to read the last of the proof, but it was not ready. When it is ready it will be mailed to the members, together with the notice of our next meeting.

President — Here are quite a number of copies of the report of our last meeting. The members will please help themselves.

The Society then adjourned.

W. S. DEVOL, *Secretary*.

J. M. WESTWATER, *President*.

Columbus Horticultural Society.

BOARD OF TRADE ROOM,
COLUMBUS, OHIO, July 30, 1886. }

The Society was called to order at 3:30 P. M., by the President.

The Secretary stated that the printing of the minutes was not yet completed; on motion, the reading of the minutes was dispensed with.

Mr. Aldrich presented the name of Mr. L. J. Critchfield, who was thereupon elected to membership.

The reports of Special Committees being called for, Mr. Devol said that the subject chosen for next meeting was "Exhibitions;" especially in reference to this Society. Would the interests of the Society be farthered by holding exhibitions? and how may they best be conducted?

The Secretary read correspondence containing the following: A request for copies of the proceedings of May 29, from L. B. Wing, Newark, Ohio.

A request that his name be taken from the roll of members, because of removal from the county, from J. M. Bennett, Chester, Neb.

The Secretary was instructed to send reports of proceedings to all requesting the same.

On motion, the request was granted.

The regular papers being called for, Mr. Horace Wilson presented the following, on "OUR FOREST TREES AS SHADE TREES."

Mr. President—I am like the student who did not get his lesson, when called on to recite, and must say "not prepared." I was away from home when notified of this request to say something about forest trees for shade. I am not a botanist, nor have I ever studied any of the subjects german to the science.

I am not a landscape gardiner. Life has been to me full of the practical and the real. I like things that are useful, and not too ornamental. Something that stands out and can be taken hold of and applied to the use, comfort and the happiness of humanity. When a boy, I liked pictures that had utility in their look. Ideal landscapes were a myth. Horses, cattle, lawns, forests, people at work, or at good honest play were my delight. Landscapes that showed upon the canvass bays, inlets, rivers and brooks with fisherman at the enjoyable and yet laborious pastime of

gathering in, by hook or crook, the finny tribes for the larder. These made me hungry, and I liked them.

Woods and mountain scenery, where the huntsman was in earnest pursuit of his game, not for pleasure, but to be utilized. I loved to look at such pictures and longed to be there. My son whilst in Europe sent me many photographs of the paintings and statuary of the old masters, and some of the Black forest of Germany; but he sent among others, the photograph of a market scene, where old and young were buying and selling their wares, and doing those things that looked like business. I have looked at that picture about as much as all the others, because I liked it. It was real. So it is about forests and forest trees. I do not know them botanically; but as a whole, or as something to be utilized. A saw log is not poetical, yet I like a saw log, because it is useful.

Shade trees in the abstract amount to nothing, either as to kind or quality; only as to the manner of their use. The most beautiful shade tree in the world, in a dense forest or in your kitchen, would interest no one. But "*Forest Trees as Shade Trees*" have something real. A subject that books might be written on. The shade trees of Alaska, the shade trees of the Temperate Zone, and the shade trees of the Tropics, all would have to be classified under different heads, although they should only be the forest trees. But my subject, as printed in the program, says "*Our Forest Trees*," Now we own Alaska, we have a good slice of the Temperate Zone, and about as much of the Tropics as we need from the trouble we have had with and about it, and if the author expects me to discuss *our* forest trees as shade trees in these three latitudes, I shall decline positively, because I could not do it. And if he expects me to consider the trees that grow in the forest as shade trees, even in Ohio, I will also decline, because I am not competent. And if he means by "*our forest trees*," the forest trees owned by this Society, either individually or collectively, I can answer readily that I do not know. But if it is meant the forest trees of this latitude and longitude, I will do my best to tell very concisely all I know. My experience as a farmer is that no tenant that

I have had, wants any forest trees at all. It occupies the field, interrupts plowing and shortens the crop. He says, use the forest itself, trees and all, for shade. Don't use the fence rows nor the fields, even though they be pasture fields, for some time they must be plowed. This is what the tenant says. The real husbandman and agriculturist does think and sometimes studies to beautify and make his farm useful by the planting or leaving of forest trees for shade.

Then comes the question what kind and where to put them. I might perhaps say that all forest trees will make good shade, with here and there an exception. But the class of forest trees for shade only, are such as have large tops, strong roots, of healthy growth, and a clean, thick and at least a pleasant foliage, clear of insect life, and of steady and yet reasonably rapid growth. The black walnut and the sugar tree stand out to me as the trees first in the list of forest trees for shade.

The walnut is clear of insect life, has a good top, root reasonable, rapid growth and properly cared for makes a good shade and is useful both for timber and mast. The sugar tree comes next for its beauty, density of foliage and good health. Then there is the sycamore that makes good shade and is of fair growth, but objections are made on account of the bark, the balls and the peculiar character of its foliage. The soft maple is a rapid grower, reasonably dense, but in this latitude is more or less effected by the insect and catapillar. It is a popular tree as a shade in cities, towns and villages on account of its rapid growth. The chestnut, where you can get it to grow, is a splendid shade tree, but in this immediate vicinity it is difficult to succeed with. There are many of the small trees belonging to our forests that make fine shade for lawns, especially such as the persimmon, the mulberry, the haw, the thorn, dogwood, buckeye and even the paw-paw.

But all of these have their objections and some are very difficult to make grow. I had in my lawn several fine young paw-paw trees that bid fair to be a success, but all are dead but one; that blossoms, but as yet bears no fruit. The objection to forest trees bearing fruit is that from one cause or another they usually get destroyed about the time they indicate success.

I once knew a gentleman who planted out a row of apple trees, on his sidewalk, in my native village. They were a good variety of apples, I know. He said there was no use of having forest trees for shade on one's sidewalk when fruit trees made just as good

shade, and then you could get a crop of fruit besides. The trees grew and so did the boys of the village, and Uncle Hull Foster learned for a certainty that apple trees would not make good shade on the side walk and grow along in good kindly relations with the boys of the town. The apple trees were a failure. I can not say as to the boys.

If I were a thorough botanist and knew the history in detail and the characteristics of forest trees in general, I might give many other varieties of trees that could be used for shade. The oaks, many of them, make beautiful shade, but they are slow growers. Still many varieties are hardy, top out firmly, and, to give them the time, they perhaps for farm shade, answer much better than some already named. Forest trees left standing when the land is cleared may, almost without distinction, be left for shade. Yet a few are utterly worthless. The location of forest trees for shade is a matter of considerable moment to the farmer. Whether they shall be planted in rows, or singly, or left or planted in groups, is well worth considering. Groups of trees on high ground or poor knobs seems preferable. It affords more dense shade, is more social in its comforts and less liable to damage by stock tramping the ground, the breeding of insect life, and thereby damaging the roots, and ultimately destroying the trees. Single forest trees left in fields when cleared, and care taken as to the selection of the tree, affords often a comfortable resting place for the laborer, where he can take a cool drink from his jug—of water, left there under a bundle of straw. It is not pleasant to see a perfectly bare field, especially if large, it looks barren and desolate.

The question of how much should be devoted to shade, on farm lands, is getting to be in Ohio, quite a problem. What per cent. of our land is to be dedicated to shade and timber, is one of vital importance to the land owners of Ohio. I would say not less than twenty per cent., and then the manner of distribution is perhaps of still more importance, so as to meet the requirements generally of the whole State.

In the blue grass region of Kentucky, the farms are quite largely devoted to pasturage, and I have noticed that in most cases the best trees are all left for shade. Large parks are to be seen full of the giants of the forest, and all underneath a green thick sod of grass, giving food and shade to the herds of blooded stock that are left there for the summer. In Ohio our farms are, as a rule, of fewer acres, and each farmer has to adopt his shade to his farm as to make the most.

One forest tree, indigenous to Ohio, about which I must say a word. The elm, many varieties, make beautiful shade. Broad street has this tree, and as yet, I am not advised that it has been a source of anxiety or annoyance to the citizens from worms or insects. In New Haven, Connecticut, where the elm is almost the universal shade, in fact it is called the city of Elms. There nearly every year these fine old trees are filled with the larva of insects that soon grow into countless numbers of worms and caterpillars. In fact so thick are they that passers by are pretty well sprinkled with these pests, and to the ladies especially, it is any thing but pleasant. Remedies innumerable have been applied, but as yet I have not learned that entire success has followed.

In conclusion, I must say that I regret that I could not do this subject greater justice. But such as I have, give I unto you.

Mr. President—I would like to state that in regard to the oak, there are varieties, such as the pin oak and red oak, that are useless as shade tree, but the white oak is a good shade tree. There are varieties of the elm, I am told, that are not subject to insect depredations. How is it about those on Broad street?

President—We have experienced no trouble to speak of from insects on the Broad street elms.

Mr. Aldrich.—As I came down High street I observed a house with a part of the roof and front torn away. Beside it was a large forest tree which had been blown down by yesterday's storm, doing the injury to the house. Where forest trees have grown in the original forests, and become tall and slender with the branches mostly at the top, there is considerable danger of their blowing down and damaging buildings. Most of our forest trees, when grown by themselves, branch low and do not become so tall, and are not so easily broken by the wind.

Mr. Alwood.—The white oak makes a fine shade tree; but I think that the chestnut oak makes the finest shade tree of any of the oaks. There is a specimen on the University campus, which I consider a very beautiful tree.

Mr. Green.—What is the best tree for street planting?

Mr. Alwood thought the sugar maple the best.

Prof. Lazenby then addressed the Society on the subject,

THE IDEAL SHADE TREE FOR THE SUB-URBAN LAWN.

The requisites of the ideal shade tree may

bedefined under four heads: 1st—An agreeable and suitable shade; 2d—Ornament; 3d—Hardiness and freedom from insects, disagreeable odors, etc.; 4th—Freedom from litter. A thorough classification of the essentials would require many sub-heads under the four given, but these will answer our purpose.

1st. All shades, even though sufficiently dense, are not agreeable. A carpet or blanket hung up will make a shade; but it is not an agreeable shade. Some trees give just such a shade. The horse chestnut is one, the catalpa another tree of this kind. The chief reason why their shade is not agreeable is because the leaves are too large. Other trees have too small leaves; as the honey locust, and perhaps the yellow locust. So far as the matter of shade alone is concerned, it seems to me that the beech comes the nearest making the perfect shade. The leaves seem to be about the right size, and are not all borne on the ends of the branches, as many trees have them. I would place the elm next, and then the maple.

2d. Ornament must be considered largely as a matter of individual taste. We cannot dispute taste. But we must always have due regard for unity and harmony. Environment will enter largely as a factor in this. Utility, aside from the fact that it is shade trees that we are after, should not enter as a factor. Some fruit trees may be all that is desired, as to form and agreeableness of shade, but the object sought with these is fruit and not shade, and they are out of place on the lawn.

3d. Hardiness should always be taken into consideration in this climate. Many of our best shade trees are not perfectly hardy, in exposed situations. We should always set such as will withstand our severe winters. Many of our trees are liable to attacks from insects. The elm, considered one of the best shade trees, is a favorite food of the canker worm, especially when apple trees are near; and the fall web worm also infests it. The soft maple is troubled much in recent years with the scale. Longevity is another important requisite. The associations so often linked with old trees, which, perhaps, were planted by an ancestor, greatly enhance their value.

4th. The fourth point is one that should never be overlooked. There are trees with large compound leaves which drop at maturity and make a very bad litter upon the lawn. The alanthus is one of this class, and perhaps the horse-chestnut and walnut are objectionable on this ground. The willows have the bad feature of breaking and scattering twigs in every storm. Many are objectionable on account of the fruit littering the lawn. The

hickory, horse-chestnut and walnut may be mentioned as possessing this objection.

The size of the ground should always be taken into consideration. On small grounds, the horse-chestnut may make a more desirable shade tree than the elm, despite its objectionable features. The three that I consider best for general planting for shade are the elm, beech and hard maple. I have not mentioned the soft maple, because of reasons evident to-day. The stem is brittle, and yesterday's storm broke off many of them in this city.

Mr. Wilson.—Is there any difference between the horse-chestnut and buckeye, and if so what?

Prof. Lazenby.—Yes, the horse-chestnut is an introduced species, the buckeye native. The former has seven leaflets, and the fruit is quite prickly; the latter usually has five leaflets and the fruit is larger and smoother.

Mr. Mix.—To what elm do you have reference?

Prof. Lazenby.—The native white or American elm. The European elm is planted some, and while young is, perhaps, of better form; but with age the American elm improves and I think surpasses it.

Mr. Alwood.—Will the beech make a good shade tree in open grounds?

Prof. Lazenby.—It is rather a difficult tree to transplant, but can be handled successfully and made into a good shade tree.

Dr. Townshend.—There are two trees that are excellent for shade that have not been mentioned. One is the linden or basswood. The handsomest drive that I am acquainted with has four rows of this species. I am glad to know that some are being planted in Columbus. The other is one that we have to make somewhat artificial—the magnolia. The cucumber tree is perfectly hardy here. Upon this we can graft the magnolia. There are some half a dozen varieties that can be grown here in this way. To my eyes the magnolias are far in advance of any others. The horse-chestnut with its varieties I should place next.

President.—Is the basswood long lived?

Dr. Townshend.—In comparison with the pine, it is not; but in comparison with man, it becomes quite old.

Mr. Green.—One objection to the linden is the tenderness of its bark and the ease with which it peels when twisted or otherwise injured.

President.—Miscellaneous business is next.

Secretary.—I would call the attention of the members to the display of gladioli upon the table. The display sent by Mr. M. Crawford of Cuyahoga Falls, O., and shown at the exhibition last summer, will be recalled by

all that attended that meeting. These were grown from bulbs sent by him to Mr. Green and grown this year by Mr. Roth at the University. Perhaps Mr. Green can tell you more concerning them.

Mr. Green.—I have nothing to add except that they are all selected from seedlings raised by Mr. Crawford.

Mr. Wilson.—I think we should do something or take some action to convey to those concerned in making this fine show, some measure of our appreciation. Modesty prevents those in any way connected with the University from saying anything in praise of the exhibition. I move you that we extend to those instrumental in making this exhibition, a hearty—that is a heart-felt—vote of thanks. Upon receiving a second, the motion was put and carried.

The Secretary read the following bills, which were ordered paid:

To M. CRAWFORD, Dr.	
May 3, '86. 214 Strawberry Plants—	
9 vars.....	\$12 70
To G. H. & J. H. HALE, Dr.	
April 12. 12 Earhart Raspberry	
Plants.....	3 00
To MRS. P. J. LOFLAND, Dr.	
July 30. Granulated Sugar.....	\$2 00
3 lbs. Coffee @ 23....	69
Help hired.....	1 50
	4 19
To EMMA OVIATT, Dr.	
July 1. Reporting June meeting..	3 00
To GAZETTE PRINTING HOUSE, Dr.	
May 31. 250 Circulars, Strawberry Meeting..	\$2 00
June 10. 350 Reports May 2 Meeting.....	12 75
June 14. 400 Reports, Strawberry Meeting..	13 00
200 Circulars, July Meeting	2 00
	29 75

The following dues have been received since the last report:

From A. D. Rodgers, Dues for 1881,'82,'83,'84,'85,'86..	\$5 00
" J. M. Bennett, Dues for 1883,'84,'85 and '86.....	3 00
" Chas. E. Burr, Dues for 1881,'82,'83,'84,'85,'86..	5 00
" J. E. Jones, Membership Fee	1 00
	14 00

On motion, the Society adjourned to meet on Saturday, August 28, 1886.

W. S. DEVOL, Secretary.
J. M. WESTWATER, President.

Columbus Horticultural Society.

BOARD OF TRADE ROOM, }
COLUMBUS, OHIO, Aug. 28, 1886. }

Society was called to order at the usual hour by the President.

The minutes of the last meeting having been printed in full, on motion, their reading was dispensed with.

At call of report of special committees, W. S. Devol said that the following had been prepared as the programme for next meeting: "Natural History of the Grape"—Prof. William R. Lazenby.

"Propagation, Culture and Improvement of the Grape"—W. J. Green.

"The Vine in Literature"—Rev. W. R. Parsons.

"Grape Dishes"—Mrs. O. W. Aldrich.

"Essential Requisites of a Perfect Grape"—W. S. Devol.

"Some Insect Enemies of the Grape"—W. B. Alwood.

"Varieties of Grapes"—Geo. W. Campbell, Delaware, O.

The report was accepted and the programme adopted.

Dr. Townshend, Committee on Botany, reported:

"I have at home, but forgot to bring a branch to the meeting, a pear tree bearing fruit and flowers at the same time. I account for this strange freak as follows:

"The poison ivy (*Rhus toxicodendron*), a plant toward which I have great hostility, is found to some extent near where the tree stands. The plants of this were cut a month or so since, and, after drying, burned. The dry grass about the heap of burning ivy caught fire and burned under this pear tree, and scorched the leaves quite severely on some of the lower branches, so that some of them fell off. On part of the tree the leaves were uninjured. Where the leaves were scorched, there are now flowers, while on other parts of the tree there is fruit. What the physical or chemical changes set in motion by the fire may be, I am not prepared to

say; but these are the facts as I have seen them."

President—The other members of standing committees not being present, or prepared to make a report, we will pass to the regular papers and addresses. The first is an address by Dr. N. S. Townshend on

EDUCATIONAL VALUE OF EXHIBITIONS.

Mr. President, Ladies and Gentlemen:

Exhibitions may be special, or general; like the exhibitions of this Association, they may be limited to fruits and flowers, and therefore be horticultural and special, or like the State Fair which is about to open, and embrace the products of all the industries of the State, and therefore be general. The influence of special and general exhibitions are similar, except that the special interest and instruct the few, while those that are general, may be expected to interest and instruct the many.

The word education is made from the Latin *duco*, to lead, and is used to represent all the steps and processes by which the several powers or faculties of body and mind are lead out and trained to efficiency. The bodily senses need to be trained so that they can make correct reports to the mind of all that effects them, and the faculties of the mind need training so that they may correctly interpret the influences made upon the senses. The hand, that most wonderful instrument, requires much training before all its capabilities are developed. The mental faculties must be trained to attention, observation, comparison and judgment; must learn to perceive resemblances and differences, qualities and relations, and to acquire a knowledge of things, to learn what they are, of what use, how made, and at what cost, etc.

How do exhibitions educate? They afford interesting materials upon which the senses may be exercised and trained; they afford attractive objects of attention, observation and comparison, objects which invite an exercise

of judgment and make a permanent impression upon the memory; how much easier it is to remember anything that we have seen, than what we have only heard or read of. Many objects presented at exhibitions require a careful exercise of the reasoning faculties for their comprehension. Other objects excite the imagination, and suggest new and interesting combinations. In many minds exhibitions seem to awaken a sense of the beautiful and perfect, and so lead to higher conceptions of life and its possibilities, and all this is done in an agreeable manner. Men, women and children will rush to see an exhibition of new and choice objects, and easily learn very much about them. How different this from the slow, unattractive, and, perhaps, compulsory methods of the ordinary school, to which, Shakespeare says, "The whining school-boy like a snail creeps unwillingly." An exhibition is a collection of object lessons, and although it may be true that a few persons can obtain tolerably clear ideas of what they hear or read about, with most of us there is force in the common expression that "seeing is believing," and it is only of the things we see that we obtain clear and lasting impressions. Besides this, the comparisons and judgments which exhibitions invite greatly stimulate the desire for improvement.

"Necessity is said to be the mother of invention," and it is doubtless a chief stimulus to efforts, but when the passing need has been supplied it ceases to prompt, and the man who has acted upon this impulse only, becomes satisfied and says, "It will do," "This will answer," etc. Only when a man's work is compared with that of others does he feel pain at falling behind, and form a determination to be first rather than last. If then, we must admit that necessity is the leading stimulus to effort and invention, we may safely claim that a comparison of results is entitled to be considered a principle cause of improvement and progress.

The English people learned an important lesson from the International Exhibitions held in London in 1851, and in Paris in 1867, and which led to most important results. Before these Exhibitions many English people had indulged in the pleasant fiction that all sorts of English manufactured goods were not only the most durable, but in all other respects the best in the world. These Exhibitions opened the eyes of some to the superiority of many of the wares of other countries; others were brought to see the same unwelcome truths by the fact that English goods could not be sold as readily as formerly in the world's markets. As is usual in that country a committee of Parliament was au-

thorized to enquire the causes of this change, and of the consequent depression of trade, and propose a remedy. The committee did its work thoroughly. It reported that the depression of trade resulted from the fact that English goods were not as saleable as formerly in other countries, and the reason assigned for this was that English goods, though perhaps as honestly made as heretofore, had not kept up in style with the progressive tastes of the times and had come to be considered plain, clumsy and inartistic. The committee found the cause of all this in the fact that a majority of English artisans were uneducated, or at least without cultivated taste. Then the committee completed its work by reporting a most comprehensive and admirable plan for National Schools which was adopted, and went into operation in 1870.

For purposes of sale, public exhibitions of the products of farms and shops have been made from remote periods; these exhibitions, called in England fairs, from the Latin *feria*, a festival or holiday, were known in France as early as the Seventh Century, and were introduced into Britain by Alfred the Great in the Ninth. St. Bartholomews, the great annual fair of London, was established in the Twelfth Century. National industrial exhibitions have been held in France at intervals from the beginning of the present century. The first International Exhibition was held in London in 1851. Similar exhibitions in New York and Dublin in 1853, and in Paris in 1855. Again in London in 1862, and again in Paris in 1867, and at Vienna in 1873. The Centennial Anniversary of American Independence was celebrated by the great Exhibition at Philadelphia in 1876. Another International Exhibition was held at Paris in 1880, and the Cotton Centennial at New Orleans in 1884.

We are now about to enter upon the State Fair of Ohio, which is to be held for the first time on the new Fair Ground near this city. At this Exhibition every industry of the State will doubtless be represented, and both old and young will have an excellent opportunity of seeing and learning something of its varied productions.

In 1888, upon the same place, we expect to welcome Ohio's Centennial Exposition, which is to be "commemorative and illustrative of Ohio's past century of Progress." It is also intended to be commemorative of the passage of that glorious ordinance which secured not only the settlement, but the freedom of the Northwestern Territory and all the Grand States since organized within its boundaries. This Centennial Exposition, I

trust, ladies and gentlemen, you may all live to enjoy.

Prof. Lazenby—During my life I have attended perhaps thirty large exhibitions or fairs. Others here may have attended many more. But if asked just what I had learned, I confess that I would be unable to say. This leads me to think that our exhibitions are susceptible of improvement. Perhaps I have underestimated their value. But I think that after all that we may say and do concerning exhibits, *the people* is the great feature of the exhibitions. The fault of the exhibitions not being what they should be lies with the people themselves. They don't go to learn. The large crowd called by the races, perhaps, makes a fair a success. There is one thing I should like to see, and that is a listed account of the things, giving a brief, concise history and description of things shown—of horses, cattle, fruits, farm products, etc.—for the benefit of visitors. This would be especially valuable in the fruit department. Now of the grapes—this being a good season—there will undoubtedly be a good display this year. But how many will remember even the names of the principal varieties shown? There might be some one appointed to give a short talk at a stated time on the varieties of fruits and breeds of stock.

Among those humiliated in this world, the public speaker stands high in the list, for he certainly has great opportunities to become humiliated. Invited to speak upon some subject, and arriving at the time announced, he is apt to find a few people assembled, in place of the eager audience expected. There might be a building prepared purposely for this speaking, where one after another could address those who desired to hear, concerning the various articles exhibited.

Rev. W. R. Parsons—Some of us remember when it was customary to have speaking at the fairs. When Horace Greeley gave out his bits of concentrated wisdom, he lacked an audience. This would be the trouble now. The sentiment is not in the direction of speaking. The excitement of the time is the affair of the time. The boys that have been to the races, go home whipping the steady old farm horse, thinking that they themselves may be behind a great racer. Thus their minds are turned entirely towards the things exciting.

There is a way in which we think fairs beneficial. It is in their bringing us to the knowledge that there is something better than we ourselves have in fruits, machinery, stock, etc. By comparison we find that one surpasses us in one direction, and another in another direction, and we are thus brought to see where improvements can be made. But where the

interest in the exhibition lies, depends upon the drift of the sentiment. The whole thing depends upon the sentiment.

This may be further illustrated by the story of the boy who thought that his horse was a race horse. He had heard that a pair of spurs would make a horse gallop. He went to the store and asked for one spur. The merchant told him he sold them only in pairs. The boy said he wanted but one. "If I make one side gallop," said he, "the other side's got to gallop."

Mr. Wilson—My first recollection of a fair was of the one at the Crystal Palace of New York, up by the water works. I happened to be in New York at the time. It was wonderful. I'd like to see a "crystal palace" in everybody's door yard in America. I think this was a great educator, and it was one of the first.

I want to suggest one thing in addition to that of Prof. Lazenby's. Let a man be appointed to speak at the exhibition of horses in the ring, and one when the cattle are shown, and so on for all the things examined by committees. We have the object before us then, and need some one to explain the lesson. The first time that I went to the Smithsonian Institution I thought there would be little to learn there, so sat down when I got there. Soon my son got interested in the things, and called me to see a collection of birds' eggs. Each egg was labelled and had a short printed history or description of the species of bird. This gave the collection interest, and I found the whole thing interesting on this account.

The Massachusetts Horticultural Society holds several exhibitions during the year, and they have become very prominent.

President—Would it be well to request the managers of the State Fair to introduce this system of lectures in connection with the exhibition?

Prof. Lazenby—I would like to see this agitated.

Mr. Aldrich—I think there is too much going on and too much excitement to have any thing done now. The meeting of the State Horticultural Society would be a better place to discuss this. I think the local exhibition could be made more beneficial. There should be some one with every exhibit to give information regarding the articles. The soil in which a crop grows and details of management, would then be sought from exhibitors, which would lead to improved methods. The reports on exhibits could also be much improved. Now they are reported on in a very indifferent manner. One with the exhibit to tell all good and bad qualities,

and an improved report on the exhibits would add great value to the exhibitions.

President—The next in order is a paper by Mr. W. J. Green.

As Mr. Green was compelled to be absent, the Secretary read his paper on

METHODS OF EXHIBITING AND MANNER OF REPORTING UPON EXHIBITS.

There are two methods of managing horticultural exhibits. One plan is to bring in every thing of the season in the flower, fruit and vegetable line. This is what we see at the fairs and may be called a general exhibit. The other plan is to make exhibits at particular seasons; thus we may have a chrysanthemum show, a grape show, or a show of any particular product that is important enough to warrant being made a specialty. This method is quite common in Eastern cities and very successful. Undoubtedly the conditions are more favorable there than here, but for various reasons it would seem to be the better plan to follow here, at least if we modify it somewhat so as not to exclude other products of the same season. The first reason is that the premiums being few in number may be made sufficiently large to induce exhibitors to make a display. We know from experience that small prizes will not secure exhibits, and if we attempt to cover the whole field of horticulture at each exhibition the prizes must necessarily be small. It is better to give a good sum for one article and have a room full of it, than to divide the amount into numerous small sums and not get enough to cover one table. Offer ten or twenty dollars for the best collection of any particular fruit or flower and there will be ten or twenty times as many exhibitors as there will be if the sum is divided into ten or twenty premiums. Something massive or striking is what takes the public eye, and a large display of roses, verbinas, grapes or strawberries is surely striking and instructive as well. Indeed, we may claim this as one of the merits of the specialty plan. We find more to instruct in a full or complete display of one particular product than in a collection composed of dribbles.

The only way in fact, to get out a full display of any particular product that will be of interest to professionals and amateurs, is to adopt the specialty plan. The public will not, of course, look at it in the same light; they will look at it as a whole. They will not see the fine points but look rather at dimensions, thus all will be pleased, whereas no one would find anything to admire in a general exhibit of fruits, flowers and vegetables, unless it was large and complete, which

as a matter of course, it would not be if small premiums were offered. This work is largely educational, hence we want to get people to come to see our exhibitions. To do this we must have something for them to see. A great variety of products is not necessary, but what we have must be of good quality and we must have plenty of it.

Liberal premiums, if judiciously offered, will surely bring exhibitors. The question arises can the Society afford to offer liberal premiums? To answer this question we should need to inquire into the condition of the finances, but the suggestion may be made that we charge a small admission fee. This will help to increase the premiums and thus insure a good show. If we can confidently assure the public that we have something worth seeing they will more willingly pay to see it than to come and see something inferior for nothing. The only reason for charging an admission fee is to enable us to offer better premiums, but if we can afford to make the premiums liberal enough then there is no need of an admission fee. It is a fact, however, familiar to all that things are valued about in proportion to their cost. But little is expected of a free exhibition and few care to put themselves out of the way to go to one. It matters but little, however, in case a good show is assured whether a fee is charged or not, people will go any how.

As to manner of reporting upon exhibits but little need be said, except that reports ought to be impartial. There is a method of reporting, often practiced, that is sure to cause hard feelings on the part of exhibitors. The method referred to is that of making reports for the simple reason of puffing and advertising somebody's wares. Praise for worthy exhibits is not out of place if moderately indulged in, but usually it is enough to state to whom the premiums are given, and praise the exhibit as a whole. In order to facilitate work a complete list of the articles brought by each exhibitor should be given the committee. In making reports the committee should report premiums and name meritorious exhibits, but avoid all praise and criticism. Such work should be left to the Secretary and reporters.

Mr. Wilson—We are right in the face of the State Fair. Those who attend—and a large part of the population will attend—will come home tired out, and will resolve not to attend any more exhibitions this year. I think, therefore, that we should not try to hold an exhibition this fall.

President—The State Society will meet in this room on Thursday evening of next week.

Prof. Lazenby—I would like to urge all of

our members to be present at this meeting. We have had the State Society with us for their December meeting two years in succession, and I hope the members will feel at liberty to attend in full force.

Mr. Aldrich—I think Mr. Wilson's suggestion as to postponing any proposed exhibition this fall is a good one, as it would be very insignificant compared with the State Fair.

Dr. Townshend—The programme for next meeting, as read by the Secretary, shows that it is to be a grape meeting. It seems to me that we need not try any thing more than the exhibits that the interest in this will bring out. In regard to lectures, there has been provided by the State Board of Agriculture, a hall, put in the hands of the State Grange, for the purpose of meetings and lectures. At this place we can hear speaking at almost any time we wish to go there. It was at one time—thirty or more years ago—quite the fashion to have speaking at the fairs, but it is not now customary.

A motion to invite the State Society to again hold its annual meeting in Columbus was lost.

MISCELLANEOUS BUSINESS.—Mr. Aldrich showed some pears. He said this was the first time the tree had borne. It was an upright tree, more the shape of a Lombardy poplar than an ordinary pear tree. The pear was not identified.

Mr. M. Witt exhibited clusters of his new white grape. The berry is not globular, but a little longer than broad, yellowish green, juicy, pulp melting, with few seeds, and a good flavor.

Mrs. Eliza B. Kimball showed samples of a large striped apple, which were referred to the proper committee.

The following bill was read and ordered paid:

To Gazette Printing House, Dr.,	
Aug. 28—	
350 copies proceedings of June	\$10 25
350 " " July	5 75
200 announcements of Aug. meeting..	1 25
	<hr/>
	\$17 25

The following sums have been received since the last report: From—

Geo. M. Peters, dues for '86	\$ 50
Fred. Lazarus, dues for '83, '84, '85, '86,	3 00
C. A. Roth, dues for '82 '83, '84, '85, '86,	4 00
Chas. Parrott, dues for '85, '86,	1 00
J. J. Nelson, dues for '83, '84, '85, '86,	3 00
M. Witt, dues for '86.....	50
	<hr/>
	\$12 00

Secretary—Notice was given at a meeting sometime since that the names of all those in arrears would be brought before the Society for the purpose of considering whether they should be retained as members. I submit the following list of names, with the length of time that they are in arrears, as near as I have been able to find out from the minutes of the Society and books of the Treasurer. Two notices have been sent at different dates, to each of these members, giving the time and amount of his arrears.

A—Those whose names are on the roll, but have no record of having ever paid the membership fee or any dues:

C. H. Butler,	Clara McClelland,
A. G. Byers, Jr.,	J. H. Outwaite,
Symmes E. Brown,	W. D. Pugh,
Mrs. Jas. H. Collins,	J. H. Parsons,
S. A. Decker,	John Poste,
Geo. W. Donaldson,	A. D. Rodgers,
Geo. D. Earle,	L. O. Rockey,
Maurice Evans,	Mrs. W. H. Ragan.
Maggie Evans,	Mrs. W. H. Rogers,
Edwin Evans,	N. A. Sims,
F. J. Fay,	A. W. Thurman,
W. H. Innis,	Henry C. Taylor,
Julia Jones,	John Underwood,
Josie Klippart,	H. L. Williams.
Sue Loving,	David Westwater.

B. Those who are six years in arrears:—P. E. Blesch, Chas. Collins, A. W. Francisco and J. B. Romans.

C. Those who are five years in arrears:—W. I. Chamberlain, Miss Mary C. Hunt, J. W. Jones, Mrs. Josephine M. Jones, W. S. Simmons, E. M. Van Harlingen, Julius C. Zirkle.

D. Those who are two to four years in arrears:—F. T. D. Alberty, 2 years; W. M. Fisher, 2 years; C. E. Markeson, 2 years; Mrs. E. K. Stewart, 4 years; Charles F. Schneider, 3 years; F. C. Sessions, 2 years.

On motion, the question of erasing the names from the roll of members was referred to a committee of three, consisting of the Secretary, Prof. Wm. R. Lazenby and Dr. N. S. Townshend, with instructions to report at the next meeting.

Adjourned.

W. S. DEVOL, Secretary.

J. M. WESTWATER, President

Columbus Horticultural Society.

BOARD OF TRADE ROOM, }
COLUMBUS, OHIO, Sept., 25, 1886. }

President Westwater—The Society will please come to order.

Member—Mr. President, since Mr. Campbell is here, and can not remain till the close of the meeting, I move you that he be called upon to make his remarks now.

This motion was seconded and unanimously carried.

President—Mr. Campbell, I believe it is not necessary to introduce you to this Society. They all know you.

Mr. Campbell—*Mr. President, Ladies and Gentlemen:* I have written a portion of what I have to say, thinking that what I did not say might induce some of the members of the Society to propose some questions on the subject. I shall be very happy to answer any questions in regard to anything I have to say about grapes.

VARIETIES OF GRAPES.

I find myself announced to say something to you upon "Varieties of Grapes," and I suppose it will be more agreeable, if not more profitable to you, to confine my remarks principally to the newer varieties, and those not generally known.

Two varieties now most prominent before the people are the Niagara, and the Empire State, small specimens of each of which I have before me.

The Niagara is a very strong grower and productive of handsome, generally rather large, clusters, and is a grape of fair to good quality; has succeeded well in some places, and been subject to mildew and rot quite seriously in others. My experience with it is quite limited, having fruited it this year for the first time. The vines, last season and this, have been reasonably healthy and have grown well, showing but little mildew of foliage, and ripening both wood and fruit well, though it is not nearly as early in ripening as at first claimed. It was certainly not earlier than Concord, and though eatable and perhaps salable a week or two ago, has been growing better ever since, and cannot be called over-ripe now. I will remark further upon this grape and its peculiarities when speaking of seedling grapes. The Niagara is not a high flavored grape, and its somewhat foxy odor and taste are to some objectionable.

The Empire State, of which I also bring specimens, I regard as a grape of much higher character than the Niagara, and to my taste much more agreeable. Indeed, so far as I have tested it, it really comes about as near to the requirements of "the perfect grape," having more good qualities and less faults than any other I could name, yet introduced to the public. I have grown it for several years; have fruited it to a limited extent for two years, and have found it very satisfactory. A strong and healthy vine, foliage which resists mildew equal to any I have ever grown, an abundant bearer of handsome, medium-sized clusters of white grapes, quite high flavored, sweet, without foxiness, and a little of that flavor which is so highly prized in the foreign grapes of the Muscat class. It is not as early as its introducers claimed, and is, I think, little, if any, earlier than the Concord, and like the Niagara, has been growing better up to this time by hanging on the vines. It has shown no tendency to rot with me, and I have heard of none from other places. All things considered, I should plant it, in my locality, with more confidence for success and profit than any white grape I could name.

The Pocklington is also comparatively new, and to my surprise, this season has ripened as early as the Niagara, and during a visit to Cleveland recently, I found it in market in considerable quantities, beside Concord, Martha and Delaware. This grape, I think, has been rather under-rated, as it is apparently one of the most healthy and hardy, and very productive of large berries, and generally large and handsome clusters. It has been a little slow of growth for the first two or three years, but afterwards is about equal to Concord, and I think quite as hardy and as productive. With one exception, all who have tested the Pocklington in comparison with the Niagara, in my presence, have pronounced the Pocklington the better grape. Unfortunately, both have rather too much of the foxy odor to suit my taste.

Vergennes is another new grape having merit, though it, too, is much later in ripening than its introducers claimed. Instead of being "as early as Hartford," it is later than Concord by a week or ten days. Pleasant, though not foxy, nor high flavored in any way, the vine has proven with me healthy, hardy and very productive. It has the reputation of being a good keeper. I have seen

reports that it has shown both mildew and rot at some places, but it has been quite free from both at Delaware.

I will also mention the Jefferson as one of the most desirable for the amateur grower, or for the vineyard, even, if the grower is willing to take the trouble to give it winter protection in all places where the thermometer falls much below zero. It is a good grower, sufficiently productive, with large, healthy foliage, and bearing very attractive clusters of large, red grapes, which are as good as they are beautiful. It is said to be a cross between Iona and Concord, grown from seed of the latter. It is a grape of high character, to my taste better than Iona, and one of the varieties I should never be without in selecting varieties for my own planting. It is worth the extra trouble of fall pruning and laying down, with slight protection during winter. I was absent from home this summer at the time when vines require summer pruning and thinning out of the fruit to prevent over-bearing, and the consequence was, they all ran wild and were allowed to bear and over-bear, with all the fruit and growth unchecked.

I will remark, in justice to the varieties, that all the specimens except that of Jefferson, are mere remnants, as I have but very few bearing vines of any of them, and the best clusters have been gathered long ago for testing and for exhibition at State and other fairs. I will now mention some of my experiments, and show you some of my many seedlings:

[Mr. Campbell here exhibited several new varieties, partially described below. Some hybrid crosses between a native grape of the Hartford type called Belvidere, and the foreign Muscat Hamburg:—of these, three were black, named *Clarette*, *Bruno* and *Bettina*; and two white, named *Vesta* and *Peerless*. Also two seedling black grapes grown from seed taken from one of Mr. Ricketts' hybrids called "Concord 97." These two were not named, except by numbers 10 and 13. Two other handsome black grapes, crosses with Belvidere and Grizzly Frontignan, named *Juno*, and *Juno's Sister*, were exhibited. All were grapes of fine flavor and a high degree of excellence approaching in character the finer foreign varieties which can only be grown successfully in this country, under glass. All those exhibited were grown in open ground, with ordinary care.]

I have also grown a good many Niagara Seedlings, and am inclined to think from the character of several of them which have fruited this year, it may be far more valuable as a parent of a new race than for any other characteristic. Unlike most others, it seems to

have what I may call a strong individuality, which impresses itself upon most of its seedlings. The greater portion of them have the strong growth and heavy foliage of the parent, and so far, every one that has borne has produced a white grape. I have also seen seedlings from two other sources, and they have also been white. More remarkable still, although the foxy taste and odor are quite pronounced in the Niagara, four or five of its seedlings have been entirely free from this fault, and seem to be really better-flavored than the parent. So far, the most promising one for value, bears a large, handsome, oval berry of a light, lemon-yellow color, which was ripe and gone three weeks ago, and while the Niagara was still hard and green. This being the third year from planting the seed, and the first year of bearing, the vines bore only a few small clusters, showing little besides the size of the berries and the quality of the fruit. I shall watch with much interest the development of these seedlings, some of which certainly promise to be improvements in several respects, upon the Niagara.

I have made a cross with Niagara and Empire State this year, and have the seeds ready for next year's planting. I have also many vines not yet in bearing, of various crosses, from which I expect interesting if not valuable results. I have found the *Rupestris* vine to be perfectly hardy in severest winters, and the foliage to resist mildew in the most unfavorable seasons. One vine of this species bears small, black, rather pleasant-flavored grapes, ripening about the middle of August. I have crossed this *Rupestris* both ways with some of our best natives, and some of the fine foreign kinds. I have vines growing, crossed with Delaware, Brighton, Pocklington, as well as with Muscat Hamburg, and several of the finer Hybrids.

Hundreds of seedlings, many of them really fine grapes, I have discarded and thrown away, because I did not see that they were specially better than many others already introduced, not feeling willing to add to the list of varieties unless I could add also some good quality not already attained. If I could produce a grape as good as the Delaware, with stronger growth and healthier foliage, I should regard it as a high achievement, and should have no hesitation about giving it to the world. This seedling, Poughkeepsie Red seedling, now seems to promise such a result; it is certainly twice as strong in growth, and with much better foliage. If I find that with decent treatment hereafter, it comes up to my expectations, I shall feel that I have something valu-

able to offer. But I have been too often disappointed in similar cases, by some unexpected fault, to be over sanguine. The production of new grapes has been so great, and the improvement so marked, that it now requires a variety of remarkable excellence to make any favorable impression. Varieties that would have been worth a fortune to their possessor twenty-five years ago, would now pass unheeded and unnoticed. But the improvement will still go on; and the advent of such grapes as the Empire State and the Jefferson, the Brighton, and many other fine hybrid varieties, though not all suited to general culture, gives us reason to believe that we may at no very distant period have grapes of the highest character from which selections may be made suited to all grape growing localities. It must be remembered, however, that there is no one grape suited to all localities, and that there is also no one locality suited to all grapes.

A member asked Mr. Campbell if the grapes he had spoken of needed no winter protection.

Mr. Campbell—Not ordinarily. The Niagara, I cannot say so much about. I have always protected that. The Empire State has endured thirty-two degrees below zero. I had but one vine at the time the winter was so severe that was large enough to bear. I intended to leave it uncovered all winter; but when the thermometer fell to thirty-two degrees below zero, as I was very anxious to have it fruit, I went out and bent the vine down to the ground and covered it with snow. I left it lying on the ground until spring. That vine bore, but it had endured thirty-two degrees below. There was another vine in another place that I had cut down to about one foot from the ground, but the buds started from that, and made a good growth. I think it is hardy. How it might have done if I had left it exposed to the continual freezing and thawing during that cold weather I cannot say. I think likely it would have been injured.

I made, several years ago, a cross upon a grape of the Hartford Prolific character called Belvidere, which I presume is a seedling of the Hartford Prolific, having all its characteristics, bearing large and rather handsome clusters. I crossed that with the Muscat Hamburg. I planted a row of seven of these seedlings in my garden, knowing nothing, of course of what any of them might produce. The first three were white and the next four were black. They all seemed to partake somewhat of the character of both parents, except the white grapes. I can not see any thing in these that appears at all like the Belvidere, although

they have some of the Muscat flavor. They are like other hybrid grapes, not quite hardy in severe winters, and the foliage is not always entirely healthy; but they have borne, with ordinary care, every season since they began. They are interesting as to the effect of crossing or hybridization.

Prof. Lazenby—May I ask you where you got the pollen?

Mr. Campbell—I took it from vines which I grew myself. I have a few foreign vines, under glass from which I make these crosses. From the manner in which I make the crosses, I know just what I have done.

Mr. Noble—Mr. Campbell, will you please mention what you call those grapes?

Mr. Campbell—I have named some of these. The second white grape that I mentioned as a cross between the Belvidere and Muscat Hamburg, I call Vesta, and this other I call Peerless. There is another named Bruno and other named Bettina. This Bettina has more of the Muscat flavor than any of the grapes that I have grown. It might be very well taken for a foreign Muscat grape. I shall leave these grapes here, and you can examine them and taste them.

Member—What do you call those which are seedlings from Rickett's?

Mr. Campbell—They have no names. They are simply No. 10 and No. 12. I have two others here, one of which I call Juno, and this one, for want of a better name, I call Juno's Sister. These are a cross between the Muscat Hamburg, also, and the Grizzly Frontignan, which is a foreign grape of a reddish color. These are the only two that I have of that cross, and both of them are black. Here is another little grape that a good deal resembles the Delaware. I believe I have made some written remarks about it, but I will make a little statement about it here. Mr. Caywood has a variety called Poughkeepsie Red, and I took some seed from it several years ago and got perhaps a dozen seedlings, which I planted in a row by themselves in my garden. I think they were planted three years ago, and they grew a year before that, in my green-house. They have been planted out three years, and this one made last year about a hundred feet of growth including laterals, trained on a trellis. There is not another one of the dozen seedlings that have made more than eighteen inches of growth. Some of them have died. This is the only vine that showed any particular vigor. I left more wood on it than I ought, in pruning it last fall. I trained four canes, two each way from the main stem, and trained the bearing shoots up from them, and allowed it to bear all that it set, which I

ought not to have done. It bore over forty bunches of grapes, and these are about a specimen of them. It is remarkable as being a very strong grower and having so much better and thicker foliage than its parent. It seems to resist mildew.

In speaking of the *Rupestis*, Mr. Campbell remarked as follows: I brought a small branch of this, thinking it might be interesting to you. I got the vines from Missouri and Texas, and I have found it to be perfectly hardy in our severest winters, and also to resist perfectly the attacks of disease of all kinds. I have thought it might be a valuable plant for crossing with other native varieties.

Mr. Noble—Why is an early grape so much desired?

Mr. Campbell—There are two or three reasons, one of which is that early fruit in market always brings the highest price. Another reason is that an early grape can be grown further north, where a late grape cannot be ripened. A grape as late as the Catawba hardly ever ripens in Delaware County. I think it may ripen this year. I have had Catawbas standing in my garden twenty years without producing a single perfectly ripe grape.

Mr. Noble—Isn't there too much importance attached to the earliness of the grape, thus bringing them into contact with so much other fruit?

Mr. Campbell—I think the reason why growers try to make out that their grapes are so early, is to get the people to buy them in the north.

Mr. Noble—Is it desirable for us, to have the grapes made any earlier?

Mr. Campbell—I don't know that it is. The main reasons are those I have mentioned. It certainly is an object in localities where they must have early grapes. Many of my correspondents write, "I cannot ripen any except the earliest grapes." They say, "I must have grapes earlier than the Concord, or I can't ripen them."

Prof. Lazenby—What introduced varieties are the earliest?

Mr. Campbell—Well, I think, of the white grapes, perhaps the Lady. Second, I believe, is Moore's Early.

Prof. Lazenby—Where does the Hartford Prolific rank for earliness?

Mr. Campbell—That is one of the earliest. It is nearly as early as Moore's.

Prof. Lazenby—But you don't think much of the Hartford, do you?

Mr. Campbell—No, sir.

Member—Which do you prefer, the black or the white grape?

Mr. Campbell—Whichever suits the taste.

I think the Empire State and the Jefferson are both very good.

Member—Suppose I wanted to plant one variety of early grape, what would you recommend for me to plant?

Mr. Campbell—I think I would as soon plant the Lady for a white one, and Moore's Early grape for a black one, as any others.

Mr. Noble—What has become of the Purity Grape?

Mr. Campbell—I suppose that pretty much all that are growing in the world are growing in my garden. It is a small grape, of excellent flavor, one of the finest that I know. It has too small clusters to be popular, and it is very hard to propagate. This, I presume, is the reason why there have not been more of them grown.

Mr. Noble—Is it hardy in winter?

Mr. Campbell—It is as hardy as the Concord, and has healthy foliage. I have often thought that if it had larger berries, I would not hesitate to say it is the best grape in the United States. The trouble with it is the difficulty in propagating it, and its small clusters. I wish I had brought some of them with me, as I have some still. It is a grape that I produced myself several years ago. I think it is a cross between the Delaware and Martha.

Mr. Noble—I think it is the best grape I have ever tasted. Mr. President, I move that the thanks of this Society be returned to Mr. Campbell for his interesting exhibition and discription of the new varieties.

This, being put to vote, was unanimously carried.

President Westwater—The next in order will be the

NATURAL HISTORY OF THE GRAPE,

by Prof. William R. Lazenby.

Mr. President, Ladies and Gentlemen:—The grape, as probably all here are well aware, belongs to quite a characteristic family of plants now known by the name of *Ampelideæ*, formerly the *Vitaceæ*, the Vine Family. You are all aware that all the plants of the vegetable kingdom are grouped together into families. This is a small family, numbering only about two hundred and thirty known species. They are very widely distributed, species being found in all the tropical, sub tropical, and temperate zones, none in the frigid zones; but they are more abundant in the sub-tropical than elsewhere. As far as regards the origin of the family, it is generally believed now by botanists that the species that go to make up the family have one common origin. It is thought that Southern Asia was probably the home of the

grape, and all the plants belonging to the grape family. It is, of course, very well adapted for wide distribution, and it is generally believed by naturalists that the only object of nature in this pulpy part of the grape that surrounds the seeds is to aid in the distribution of the plant. Of course, we make great use of this part; but as far as the plant is concerned, to aid in the distribution of the seeds seems to be the only function it performs. When the plants are found growing wild, this fleshy part serves for the food of birds. The birds eat this pulp, and drop the seeds. They grow and produce their fruit, and are again carried on in the same way. In this way, by the birds, the species have been very widely disseminated.

In the United States, of this family we have but fifteen of the two hundred and thirty known species. Botanists disagree as to the exact number. In our own State of Ohio we have five species of the family; that is, we have four species of grapes, and one of the *Ampelopsis*, another genus of the family,—our common Virginia Creeper. If you will look at the fruit of the Virginia Creeper, and especially if you will look at the structure of the bunches, you will see the family resemblance. They look something like the wild grape, and the plant has something of the same habit, that is, it is climbing. And this is another interesting fact, that without exception, all of the two hundred and thirty species are climbing, shrubby plants. They are shrubby in habit, and are not herbaceous. They have fibrous, woody stems. They climb, however, in different ways. The grape, all the species of it, so far as known, climb solely by tendrils. These tendrils are simply modified branches. You might, from looking at the grape, suppose that they are modified leaves, but this is not the case.

It is simply to aid the plant in climbing. Although there is but one species of Virginia Creeper mentioned as being a native of this country, there are two forms. I am very well satisfied of these two quite distinct forms, and I think we have many species of plants in other families that are no more widely different than these two forms. The point of difference is the way in which they climb. One of the forms of our common Virginia Creeper, just as you find it growing in the wood, will adhere very closely to any support. If you take it up and plant it beside a smooth brick wall, it will adhere without any support whatever. The reason is that the tendrils are not like those of the grape. They are so made that they do not wind. The tendrils of the Virginia Creeper are more delicate in structure than those of the grape. They are more

branched, and at the extremity of every one of these branches are little flat bodies or disks, and they act as little suckers; and no matter how hard or how smooth a wall is, the Virginia Creeper will climb without any assistance, if you plant the right kind. On the other hand, there is another kind that has tendrils more like the grape, and it will not climb on a wall. You can train it against the side of a house by supporting it some way, but it will not adhere by itself. And I think it is a fact that ought to be very well understood, because when one plants one of these vines, it is very much better to plant the form that will climb without any support. I might state further that the Virginia Creeper also climbs by means of aerial roots, as well as tendrils. Here is a branch showing the aerial roots. I recently met, at Buffalo, Prof. Beal, a well known botanist of Michigan, and we were speaking about the *Ampelopsis*. He maintained that it never sent out aerial roots. He said it was a plant that climbs simply by tendrils. I was quite well convinced that the Virginia Creeper, as you see here, does very frequently send out aerial roots. These are true roots. They are not tendrils.

The four species of grapes that we have in Ohio growing wild are the *Vitis labrusca*, which is known as our Northern Fox Grape, and is still very rare in this State, being found in only a few localities; the *Vitis aestivalis*, which is known as our Summer Grape. Then we have the *Vitis riparia*, or the River Bank Grape; and we have the *Vitis indurata*, so-called, although there is a dispute by some botanists as to whether this grape is a distinct species or not; and the *Vitis cordifolia*. This is the most common wild grape there is, and, strange to say, as far as I know, this has not the honor of being the parent of any of our cultivated varieties. Is that so, Mr. Campbell?

Mr. Campbell—I don't know that it has.

The *Vitis labrusca*, that I mentioned as being one of the four, is the parent of the Concord and the Catawba, and of those grapes that come from the Concord. The *Vitis riparia* is the parent of the Delaware. The *Vitis vulpina* is the parent of the Scuppernon, etc. This is the Southern Fox Grape. This, of course, is not found in our own State.

It is a very interesting fact in natural history that—although the grape has been cultivated in Europe for many years, and in Southern Asia and in Egypt the cultivation of the grape is known to extend back as far as six thousand years—out of the innumerable varieties which have been produced during these many centuries of cultivation, none of

them are adapted to our climate. We think we have a diversified climate, but we cannot raise European grapes. We must make an exception for California. There some European grapes are grown, but we cannot raise them here. It is a matter of great satisfaction, and a source of considerable pride that workers like Mr. Campbell have been able, in a comparatively short time, to produce from our native grapes, fruit of the quality that we now have. Many of our best varieties have come wholly from our native species of grapes, and, in fact, all of our cultivated grapes have come in part from our native species. Now, as Mr. Campbell has told you already, and as those of you who are acquainted with hybridizing very well know, we are beginning to produce new varieties from the result of a cross between the European grapes and our native grapes, and by so doing we get something of the advantages of those long years of culture.

There is just one other point in regard to the natural history of the grape, and this is in regard to the structure of the blossom. All of the species of the grape family have what are called perfect flowers. That is, the flowers produce both pistils and stamens; but nature so abhors self-fertilization that in many species of the grape the blossom is so arranged that self-fertilization is practically impossible; and we have varieties of the grape in cultivation that are—it would not be correct to say they are pistillate, because they do have stamens; but they are so arranged and develop at such a time that the blossoms are practically pistillate. Such a variety of grape, if planted by itself, will produce no fruit. I have been particularly interested in this subject of the structure of the grape blossom within the last year or two. The vine from which I cut this piece is *V. cordifolia*. For a great many years it has been loaded with blossoms, but produced no fruit. No fruit was set at all. The blossoms, I found upon examination, were perfect, but the stamens in all of the specimens, were reflexed. They were not upright surrounding the pistil, but in all the cases were reflexed—bent right down—and there seemed to be quite a difference in time between the maturity of the pistil and stamens; that is, the stamens were not ready to receive the pollen when it was mature. It is dichogamous, as they say in Botany—that is, maturing the stigmas and the pistil at different times. The difference in time between the maturity of the stamens and the pistil is quite marked in the same flower.

Another interesting fact, but one, of course, that is well-known to all grape growers, is that the flowers and fruit of the grape are al-

ways borne on wood of the same season's growth. You do not see any flowers or fruit on old wood. So that, in managing the grape, the whole theory of pruning is to get a strong and vigorous annual growth. Of course, you must not have too many buds to start with. You must have just enough so that those that do start will make a strong and vigorous growth. The buds are always found in the axils of the leaves. If we should leave a vine with ten buds, that vine would have a given strength in itself; that is, a given amount of vital force in the vine. If we cut off half of these buds, all of that strength goes into the remaining half, and the five buds that are left will make the same growth that the ten would. So, if we reduce the number still farther, we will get a still stronger growth. You get a strong, vigorous growth, because the blossoms are all upon the growth of the same year, and the blossoms always appear opposite the first formed leaves on the growing shoot.

One other point in regard to the flowering of the grape. I am quite satisfied that for fertilization it depends quite largely on insects. They are attracted very largely by the fragrance of the flower. When grapes are in bloom they are very fragrant, the odor being something like that of the Mignonette. They thus attract a very large number of insects. The pollen does not fall in the manner of the pollen of plants that are fertilized mainly by the wind, but is of the character of the plants that depend largely upon insects for fertilization; and certainly those species that have reflex stamens must be dependent upon others for their fertilization.

I believe, Mr. President, that is all I have to say about the natural history of the grape.

Mr. Campbell—Mr. President, I have been very much interested in the remarks in regard to the *Ampelopsis*. The structure of the flower and that of the grape are so much alike that I have made an effort to cross them, thinking that I might make a variety that would bloom earlier, but I have not yet been able to succeed.

I believe I understood Prof. Lazenby to say that the tendrils of the grape were modified branches. I have always been accustomed to think differently. I always regard them as modified clusters of the grape. The clusters always come out in the same position that the tendrils do, and you will never find a cluster beyond the tendrils. If a tendril comes out after a shoot comes out, you may know there will never be a cluster come out beyond it. Another reason is this: the tendril of the grape has a peculiar flavor; that is, a distinctive and individual flavor. That variety of

grape (displaying one) I knew, this year before it bore, from the flavor of the tendrils; I knew that it would have the flavor of the Muscat Hamburg. I can go through a vineyard, and by tasting the tendrils, tell what kinds of grapes they are. I go out and taste the tendrils of my seedlings before they bear. Some of them I throw away, because I know they will not be good.

As an indication that hybridization is going to produce something valuable, I have no doubt that the Empire State is going to produce something of value. Although it is claimed to be a cross between the Hartford Prolific and the Clinton—and it has the shape of the Clinton leaf, but the texture of it is more like the Hartford Prolific—but instead of being a cross with a pure Clinton, I have no doubt it is crossed with a Clinton Hybrid. That very grape is an indication to me that the value of hybridization with foreign grapes is more than we think. I think it is free from all mildew and rot.

In regard to reflex stamens, there are many varieties that have these stamens that seem to set their fruit as well as those with the erect stamens. It is those that have the little, imperfect, short, curved stamens, with no length scarcely, that do not fertilize well. The Brighton has reflex stamens, and it fertilizes well.

Mr. Green—Can you cross all species of grapes?

Mr. Campbell—So far as I have tried, I have never failed in crossing any species of grapes. I have crossed a great many foreign varieties with our native varieties, and have crossed a great many of our natives, and have not found any difficulty where I could get fresh pollen.

Prof. Lazenby—I would say just one word in regard to the tendrils. Now, Mr. Campbell is right, perhaps, in saying that the tendrils occupy the position of the clusters. What is the cluster, botanically? It is nothing but a modified branch. The whole theory of Botany is that, practically, there are only three parts to any plant. These are the root, which is distinct, the leaf and the stem—with the stem, of course, including the branches. The tendril may be in some instances a modification of the leaf. In this instance, it is a modified branch. The flower, in all cases, is a modified branch.

In regard to reflex stamens, the point that I wish to make is, that the fertilization of one particular flower is practically impossible. I am not sure but what a large number of the flowers on one vine may not fertilize each other. I had reference to the fact that this seemed to be to prevent close fertilization.

Mr. Campbell—Mr. President, I find it is about time I have to leave. In regard to this tendril and branch business, I think that botanically, a tendril may be a modified branch, but I cannot help looking upon it as a modified cluster.

Mr. Noble—I would like to ask whether the laburnum has ever been found in Ohio?

Member—Yes, sir.

Mr. Noble—I would like to ask whether Prof. Lazenby considers our climate here sub-tropical or temperate?

Prof. Lazenby—Temperate, and hardly that. I think, Mr. President, in regard to that fact, we are very unfortunately situated. We seem to be right "on the ragged edge" of the sub-tropical and temperate, with the extremes of both; by going several degrees farther north, you would not have the extreme cold that we have here, neither would you have the heat.

President—The next subject before the Society is the "Cultivation and Improvement of the Grape," by Mr. Green.

Mr. Green—I have taken only part of the subject as given me. I thought that the subject was altogether too long, and that the Improvement of the Grape was all I had better attempt.

THE IMPROVEMENT OF THE GRAPE.

It would be interesting if we could trace the history of the grape not only back to the original species at which point selection was commenced by man, but farther back still and show how the different species were evolved. It is not too great a license of the imagination to suppose that even wild grapes, as we know them, have been evolved from something less desirable, or at least something not so well fitted to endure in a state of nature. There is a constant tendency in the grape, as well as other animate forms, to vary. When a seed is planted it will not produce a form precisely similar to its parent. This tendency to vary is not so great in wild species as in cultivated varieties, and it is not so great because for ages every extreme variation perished, not being fitted for the surrounding conditions.

A tender plant, or one with unhealthy foliage would of course perish. One with fruit that birds would not eat might flourish, but its race would be ended with its own death, or at least have but a limited progeny. Hence the tendency would be to perpetuate one form with only slight or unimportant variations. In this manner a species would be established. When man seeks to perpetuate a species, or variety, he may do so with certainty by means of propagation by cut-

tings, layers or grafts, but let him follow nature's method of propagating from seeds and it seems as though all the latent, pent-up forces set in at once to produce variation. This is especially true after a cross has been made. Nature discourages variations, and holds everything pretty closely to certain lines. Variations are useful to man, and he does all he can to increase the number. His difficulty is that he cannot control them, thus to produce desired results. All that he can do is to select such as are desirable and perpetuate them by artificial means. When we plant the seed of a grape we have no means of knowing what the product will be. Seeds from a black grape may produce a vine bearing a white grape, and *vice versa*. We are not able even to predict the results of a cross with certainty. This being the case we must depend largely upon accidental variation for improvement, and select such forms as are suited to our needs. Nearly all of our best varieties of grapes came in this way, and their parentage is unknown. Numerous crosses and hybrids have been produced, and some of them are valuable, but the efforts in this direction have not been so successful as could be wished. It is safe to say that efforts to improve the grape in this manner must of necessity be largely ineffectual and disappointing.

We must for the time at least, be content to merely select variations as occur accidentally. Our improved breeds of live stock are often cited as illustrations of what might be done in the vegetable kingdom. Why not breed and improve plants as we do animals, is often asked? Many have undertaken this in a rude way by selecting seed from varieties that grew near each other, thinking that a cross must surely have been produced by the pollen having been carried from one flower to another. Others with greater care have removed the stamens from the flowers of one variety and artificially supplied the pollen from some other sort, thus producing a cross, or in the case distinct species are used, hybrids. This is supposed by many to be analogous to the breeding of animals, but it is very far from being so.

It stops with only one step, whereas breeders of animals take hundreds, selecting and rejecting at every advance.

Man has never produced with plants what corresponds to a breed in animals. The different *species* of grapes correspond in most respects to well established breeds of animals, but varieties are nothing but mongrels. Cross them and you get more mongrels, just as with animals. A breeder of animals would not expect to make any perceptible improvement,

or at least no permanent improvement in the first generation if he were trying to establish a breed, but it seems that horticulturists seldom think of trying to establish a breed of plants by successive crossings and continued selection. In the case of vegetable selection is carried on, but crossing is neglected. In the case of fruits crossing is attempted, but selection is not fully carried out.

It seems therefore that horticulturists can not rightfully claim to be working as intelligently as are breeders of animals. The first cross of long wool and short wool sheep is desirable in many respects, because it has some of the good qualities of both. If the start is made with well bred animals, the first cross is usually quite uniform. Now why might we not as reasonably expect uniformly good results in crossing such varieties of grapes as the Concord and Delaware? The answer is that the cases are not by any means analagous. If we had simply started with good specimens of mongrel animals the cases would be similar; or if the Concord and Delaware had been grown for several generations from seed until they would reproduce themselves invariably in that manner, they might then be said to correspond to a breed of animals. A cross between the two varieties would then be likely to partake of the characteristics of both and that quite uniformly. Taking these varieties as we find them at present, a cross between them might, or it might not, give something desirable. There would be no uniformity in the results. The same is true of all varieties. This should not be construed that we can never get good results from crossing, but rather that we cannot get *uniformly* good results. The element of chance is present in almost as great a degree as when we select seed at random. If we had varieties of grapes that could be re-produced from seed they might be used in crossing with the hope of quite uniform and definite results, but as we have no such varieties and suitable species are so few, we may as well acknowledge that our chances of improving the grape are dependent largely upon good luck. We have had considerable good luck in the past and there is no reason why it may not continue. We have now 300 or more varieties of grapes and the list is constantly lengthening. This fact is not to be deprecated for if each and every variety should not be found worthy it helps to increase the chances of producing something better. The greater the number of varieties in cultivation, the greater the number of new seedlings. In other words the number of variations increases with the increase

in the number of varieties. The more rapidly this increase takes place the sooner we shall get the perfect grape, if such a thing is possible.

Mr. Green said farther—Mr. Campbell says he knows that he has actually produced a cross. A great many so-called crosses, though, are guesses. They don't know whether they are crosses or not. He spoke of this Empire State being supposed to be a cross; but we cannot very well say what the parentage of a grape is, unless we know that we have actually produced a cross.

You will observe that in reading I used the word "species" rather than "varieties." What Prof. Lazenby spoke of were species. What we mean here are varieties. I speak of this because there is so much talk of improving the variety. A great many speak of crossing and selecting, just as though they were using animals, but I say there is nothing analogous.

Mr. Campbell spoke of the Niagara having the peculiarity, that like established breeds of animals, it would generally reproduce itself pretty nearly. Generally, when we plant seeds from a grape, we seldom get anything like it. We sometimes get something pretty nearly like it. Often, not one out of a thousand will be like it. If we could get a variety of grape that would reproduce itself every time, we could cross with certainty, but as it is now, we have nothing but mongrels, and we cannot expect anything like certain results. If we would take seed from these varieties just as we find them, we would obtain just about as good a variety from them as if we made a cross.

A great many say it is very unfortunate that we have so many varieties. I think it very fortunate that the list is increasing so fast, because the greater number of varieties we have, the greater chance there is for improvement.

President Westwater—Any remarks upon the paper just read will now be in order.

Prof. Lazenby—Mr. President, I think the paper was one of very great interest, and deals with a very important subject. There is just one fact in connection with the propagation of our fruits that we should always bear in mind, and that is that no matter how long some of our varieties have been under cultivation—the pear, the apple, or the grape—the character is not established. The length of time does not seem to aid at all in establishing permanency of character. The grape was a seedling that gave the Concord grape. Your common Concord grape, from that time to this, has been reproduced from

that one vine simply, a reproduction of that individual vine.

There is no such permanency as we have in the common garden vegetables. There we can select just what seed we choose, and always reproduce the original. As with the grape, so with our pears and apples. They may have been cultivated a hundred years; and yet when you plant the seed you may get something that is perfectly worthless. These fruits have been propagated entirely by budding and have been reproduced hundreds and thousands and millions of times; this is the simple explanation of the fact that we have not this permanency in the seed.

Mr. Noble—I understand that the import of Mr. Green's paper is that we are not to discourage these experiments, for we may get improvements.

Member—How can we know whether we have produced a cross between two varieties, or whether we have an accidental variety?

Prof. Lazenby—You cannot, unless you protect the flower before and after you have made a cross. The flower, you know, is made up of different organs, and there are two essential organs, the pistil and the stamens. The stamens furnish the pollen which must enter the pistil. You can take away the stamens, and supply the pollen from another flower, and protect it so that it cannot get pollen from any other flower; then you may have a cross.

Member—Will these grapes be good for anything?

Prof. Lazenby—You cannot tell.

Mr. Aldrich—Do not varieties from one species have a flavor peculiar to the species?

Mr. Green.—If I understand the question Mr. Aldrich asks is in regard to the varieties of different species, whether in crossing them, they would not carry something of the qualities of the species. I think that is true. Mr. Campbell spoke of that. In using foreign varieties, it gave something of the flavor of the foreign species.

Prof. Lazenby—I think, Mr. President, we have a good illustration of that in the results of the Rogers grapes. There is a considerable degree of uniformity in his grapes, in the flavor and color. He has used only two,—we may say one variety and one species, a cultivated variety and a native species. He has taken them, and by simply following this continually, he has quite a considerable degree of uniformity in his results.

Mr. Aldrich—It seems to me that in our country, in attempting to produce simply by crossing our cultivated varieties with our native species—

I think that Mr. Munson has carried that farther than anyone else in the United States, and he has not yet obtained different results

Labrusca is the plant that is most often used.

Mr. Noble—I think that is the hope of the grape culturist, right there. We have depended entirely upon this crossing with the *Labrusca*. We did not even know that we could use foreign grapes. This theory of hybridization is introduced; a gentleman in Texas has taken it up, as he seems to have a little more push than the rest of us, and he is getting it before the societies. I am glad that Mr. Campbell has taken that very peculiar grape that he has, and the first thing we know he will have something fine out of it. I have been in the cultivation of grapes for a great many years, and with the exception of the Delaware and Concord, I do not know any grapes in which I have not been disappointed. The Delaware is disappointing in many places. It is important for us to get something that belongs to the West distinctively. I do not consider the *Labrusca* as belonging to the West at all. It is an Eastern grape. This *rupestris* I have great hopes of, and ever since I have become acquainted with this new theory, I have expected to see a great advance in the cultivation of the grape. And now, as we have occupied so much time, I think it would be well to postpone the rest of the programme until the next meeting, and put Mr. Campbell's experiments, and his explanation and what he has exhibited here, and Mr. Lazenby's description of the species, and Mr. Green's paper together, and we have before us an object lesson that I think is worth thinking about by itself.

Mr. Alwood—I was going to say that it will be necessary for me to go, and was going to ask leave to have my paper printed and not read it at all.

President—I think that a personal discussion of these things is worth a great deal.

Mr. Alwood—I move that the remainder of the program be postponed until the next meeting.

The motion was seconded, and unanimously carried.

President—The next thing will be miscellaneous business.

Mr. Devol—Mr. President, as chairman, I have to report the action of the committee appointed to report in regard to what should be done with the delinquent members. The following is submitted:

The committee has examined the books of the Secretary and the list of names read by

him at the last meeting of the Society, and finds the members to be in arrears as stated in the list. We respectfully recommend that the names of those who have not paid their membership fee, and of those who are two or more years in arrears in their annual dues, be stricken from the roll of members.

W. S. DEVOL,
WILLIAM R. LAZENBY,
N. S. TOWNSEND,
Committee.

President—What is your pleasure in regard to the report of the Special Committee?

Mr. Noble—I move that the report be accepted, for the reason that it is so easy to become a member of the Society now that it is well to clear out the old brush-wood and start new; and I would like to say that I have never been so encouraged over the Columbus Horticultural Society as I am now. Those who are interested in our subjects can become members, and we do not care about keeping those who do not attend nor pay their dues.

On receiving a second the motion was put to vote and unanimously carried.

Mr. Devol—Mr. President, being Chairman of the Special Committee on program, I have prepared the subject of the apple for the next meeting, but will suggest that this be the subject for the meeting two months from to-day, as the remainder of to-day's program is to be our next one.

There were fifteen plates of grapes exhibited by Mr. Campbell, embracing the following varieties: Clarette, Bruno, Bettina, Empire State, Jefferson, Juno, Juno's Sister, Niagara, No. 10, No. 12, Peerless, Pocklington, Poughkeepsie Red Seedling, Vergennes, Vesta.

Mrs. Kinball showed a beautiful, yellow, red-cheek, clingstone peach, supposed to be a seedling.

Mr. C. F. Glock showed three very large freestone peaches, of a green color. He said concerning them: The tree from which these were taken was bought three years ago from the Columbus Nursery, and is now in bearing the first time. The largest fruit was eleven inches in circumference and weighed twelve ounces. Upon the tree there were about one dozen of the size shown, and about thirty that were one-third smaller. The name given was Late Wreen. It closely resembles Stump the World.

On motion, the Society adjourned.

W. S. DEVOL, Secretary.

J. M. WESTWATER, President.

Columbus horticultural Society.

BOARD OF TRADE ROOMS, }
COLUMBUS, O., Oct. 26, 1886. }

The Society was called to order at 3 P. M., by President Westwater.

President—The reading of the minutes of the preceding meeting is now in order.

Secretary Devol—Mr. President, as before, the minutes of the last meeting have been printed and sent to all the members. I am sorry to say that I have no copy with me to-day, but if any one has noticed any errors, he will please call my attention to it, and it will be corrected.

President—The reading of the minutes will be dispensed with.

Reports of special committees called for.

Mr. Devol—Mr. President, as chairman of the committee on programs, I have the following to report for our next meeting. The subject of the Apple has been chosen, with the following sub-divisions:

"Apple Trees: Selecting Varieties and Setting a Family Orchard," by Col. G. S. Innis.

"Apple Seeds: or Natural History of the Apple," by W. J. Green.

"Apple Scions," or Ohio's First Nursery," by W. S. Devol.

"Preserving and Marketing Apples," by Prof. Wm. R. Lazenby.

"Apple Blossoms: or Apple Songs and Stories," by Dr. N. S. Townshend.

Our annual meeting comes a week later. I think it would be well to give notice here, that the reports of all standing committees are expected and required by the constitution at that time. The election of officers will take place at that time and the reports of the Treasurer and Secretary will also be expected. This meeting is to be on the 4th of December.

President—You have heard the report of this committee on programs. What is your pleasure?

On motion the report was accepted and the program adopted as read.

President—Regular papers and addresses, and discussion comes next in order. The subject for this afternoon will be a continuation of the papers upon the Grape, as that subject was not exhausted at the last meeting. The first is "Propagation of the Grape," by W. J. Green.

Mr. Devol—Mr. President, Mr. Green said that he did not know that it would be possible for him to be here. But he said that he

would send his paper down if he could not come. Possibly, Mr. Alwood will bring it.

President—The next topic is "The Vine in Literature." Rev. W. R. Parsons has been selected for this.

THE VINE IN LITERATURE.

It is a delightful as well as a grateful task to describe the grape in its clustered ripeness, wearing its delicate veil of purple mist, its pleasing odor, that no chemist can compound. The grace of the vine, with its glossy leaves and clinging tendrils, invokes unstinted praise, and the delicious pulp of the grape is all that the most delicate taste can desire.

Its ideal was conceived in Eden's laboratory, mid gentle showers, the sun's blazing glory, and the tempering breezes of paradise, and so became the marvel of utility and beauty.

The dream of the grape and its goodly aroma is the highest felicity in the literature of the affections, as recorded in the love songs of King Solomon. And it is no wonder that this enticing fruit lured the Children of Israel from their weary wanderings into the Land of Promise, which for forty years they had vainly sought.

The culture of the vine and the manufacture of wine from the juice of the grape are among the oldest industries of mankind. And so they hold an important place in literature and art. The expression of "sitting every man under his own vine" probably alludes to the delightful Eastern arbors, which were partly composed of vines. It was common to cover the stairs leading to the upper part of their buildings with vines. This may explain the beautiful metaphor in the 128 Psalm: "Thy wife shall be as a fruitful vine by the sides of thine house." Jacob, in the blessing which he gave Judah, said, in almost poetic language, "Binding his foal unto the vine, and his colt unto the choice vine, he washed his garments in wine and his clothes in the blood of grapes," showing the abundance of vines that should fall to his lot. "Joseph is a fruitful bough, even a fruitful bough by a well, whose branches hang over the wall." Even to this day the vine-dressers in the East do all in their power to make the vine run upon a wall, and entwine on trellises around a well, where in the day's heat the whole family repose in the shade.

Noah planted the vine after the deluge—Gen. 9: 20. We read, "And Noah began to be a husbandman, and he planted a vine-

yard." "And he drank of the wine and was drunken." It is thought that he was the first to make wine and the first to get drunk on it. He found how strong his wine was, and how weak he was. Noah must have been a man of valor, as well as a great Ark-builder. Strong in faith and mighty in deeds. But his self-consciousness must have been shocked when he went down before his own wine cup. He who had saved the world from the flood, was drowned in a wine tankard. But we must remember that the chemistry of wine was a new science to Noah, and he had lifted the veil but a little when the lesson book was closed, and the dear old man was found drunk. There is no report given of his mood when he awoke, but, perhaps, like many another wine-bibber since, he saw that "wine is a mocker," and that he rather fancied the mockery though it "sting like an adder and bite like a serpent." Though his wine was strong, but he found in it loneliness and exhaustion, and the germs of a great deal of downright meanness, as well as enthusiasm. But I confess that Noah, of all men, had the best chance to run a prohibition party; but there is no evidence in literature that he did, and if on this subject you were to "ask me less, I could not give you more."

The law of Moses did not allow the planters of vineyards to eat the fruit before the fifth year. Lev. 19: 24, 25. "And in the fifth year shall ye eat the fruit thereof, that it may yield unto you the increase thereof." The Israelites were required to indulge the poor, the orphan and the stranger, with the use of the grapes on the seventh year. "When thou comest into thy neighbor's vineyard, then thou mayest eat grapes thy fill, at thine own pleasure; but thou shalt not put any in thy vessel."

The vine and its products are interwoven with the earliest myths of the Greeks and the Romans, and the estimation in which they were held by them is sufficiently indicated by the fact that the vine was the symbol and special attribute of one of their principal deities (Bacchus), whose service and feasts formed a large part of their public religious ceremonies.

We have in the Odyssey the address of Ulysses to his aged father, in the midst of his toil and care—

"Great is thy skill, O father! great thy toil,
Thy careful hand is stamp'd on all the soil,
Thy synadron'd vineyards well thy art declares,

The olive green, blue fig, and pendant pear;
And not one empty spot escapes thy care,
On every plant and tree thy cares are shown."

—Book XXIV.

In the East there was a scarcity of fuel, and this was so great that they used vine twigs, and roots, and herbs. The prophet Ezekiel says in the parable of the vine, "Shall wood be taken thereof to do any work?" "Behold, it is cast into the fire for fuel." Ez. 15: 3, 4.

"If a man abide not in me," said Jesus, "he is cast forth as a branch," of the vine, "and is withered; and men gather them, and cast them into the fire, and they are burned." John 15: 6.

The vine in art was used in the adornment of the Temple at Jerusalem. Says Rosenmüller:

"Above and around the gate, seventy cubits high, which led from the porch to the holy place, a richly carved vine was extended as a border and decoration. The branches, tendrils, and leaves, were of the finest gold; the stalks of the bunches were of the length of the human form, and the branches hanging upon them were of the costliest jewels. Herod first placed it there; rich and patriotic Jews from time to time added to its embellishment, one contributing a new grape, another a leaf, and a third a bunch of the same precious materials. Its value was computed at more than twelve million dollars. This may be an exaggeration, yet this vine is of uncommon importance and had a high, sacred meaning in the eyes of the devout Jews. With what majestic splendor must it have appeared in the evening, when it was illuminated with tapers!

"And will not this help us to understand the words of the Great Teacher when he said with such overwhelming self-assertion, 'I am the true vine.'"

His disciples were wont to visit with him the temple; as they went to and fro, this vine, blazing with gold and jewels must have fixed their attention. This gorgeous magnificence must have filled them with wonder as to the real import of this work of art.

And the genius of piety in Jesus gave them the intention of the similitude. And as a Christian symbol it has been carried by missionaries to the remotest regions.

There is a beautiful allegory in the 80th Psalm, founded upon the culture of the vine:

"Thou hast brought a vine out of Egypt;
thou hast cast out the heathen and planted it.
Thou preparest room before it, and didst cause it to take deep root and it filled the land.
The hills were covered with the shadow of it, and the bows thereof were like goodly cedars."

"She sent out her boughs unto the seas and her branches unto the river." "Why hast thou then broken down her hedges, so that all they which pass by the way do pluck her?" "The boar out of the woods doth

waste it, and the wild beast of the field doth devour it. Return, we beseech thee, O God of hosts; look down from heaven, and behold and visit this vine." And the vineyard which thy right hand hath planted, and the branch which thou madest strong for thyself. "It is burnt with fire, it is cut down; they perish at the rebuke of thy countenance." "Turn us again, O Lord God of hosts, cause thy fate to shine, and we shall be saved."

There are other allegories in the Old Testament, but we will give one more, and this from the New Testament. It is found in Matthew, 21st chapter:

"There was a certain householder which planted a vineyard, and hedged it round about, and digged a wine press in it, and built a tower, and let it out to husbandmen, and went into a far country. And when the time of the fruit drew near, he sent his servants to the husbandmen, that they might receive the fruit of it. And the husbandmen took his servants and beat one, and killed another, and stoned another. Again he sent other servants more than the first, and they did unto them likewise. But last of all he sent unto them his son, saying, They will reverence my son? But when the husbandmen saw the son, they said among themselves, This is the heir: come let us kill him, and let us seize on his inheritance. And they caught him and cast him out of the vineyard and slew him.

"When, therefore, the lord of the vineyard cometh, what will he do unto these husbandmen?"

"They say unto him, He will miserably destroy those wicked men, and let out his vineyard to other husbandmen, which shall render him their fruits in their seasons."

You will pardon me for referring, as I think, to the great lesson herein taught.

Duty is God trusting us. The sentiment of duty is to feel that we have a trust from God. The tillage of the soil is ours; and conscience, in self-reproach, confesses the power of self-command. This consciousness that he is lord of something inspires a man with self-asserting energy, quickens man's sense of obligation, and makes him aware that he has much to answer for good or evil in this world. His sphere of duty is a place of power, and in ruling it he holds a kingly attitude toward all it contains; and whether it be farm or family, vineyard or empire, that is given him to keep in order; it lies beneath him, subject to his will, trusting to his fidelity and appealing to his love; and for all wrong doing the maledictions of conscience are the consuming fire and the gnawing worm—"the grapes of Sodom and the clusters of Gomorrah."

We have in Ben-Hur an account of the gar-

den land of Antioch with not a foot lost to labor. "The steep faces of the hills were terraced; even they were brighter of the trailing vines which besides the hue of shade, offered passers-by sweet promises of wine to come, and grapes in clustered purple ripeness."

There runs a story that one Passover Sabbath day, when Jesus was a boy of twelve, he stood with his brother at the door of their little cottage in Nazareth—his father newly dead, and his brothers and sisters playing their noisy games. And he said, "O, mother, would that I had lived in the times when there was open vision, and the Lord visited the earth, as in the days of Adam, Abraham, and Moses. These are sad times, mother, which we have fallen in."

Mary laid the baby, sleeping, from her arms, and took a sprig of hyssop out of the narrow wall, and said, "Lo, God is here! and, my boy, not less than on Jacob's Ladder do angels herein go up and down. It is spring time now, and the voice of the turtle-dove is heard in our land, and the blossom of this grape vine is fragrant with God. The date tree, the white rose of Sharon, and the lily of the valley root in him. He is in your little garden out there, not less than in grand Eden with Adam and Eve."

And the story tells that Jesus sat there, and while his mother laid the little ones silently away in their poor cribs, he watched the purple fade out from the sky, and the great moon pouring out its white fire, with a star or two to keep her company in heaven. And when the moon was overhead, there came two young lovers awfully wed, and as Jesus caught the joy of their talk to one another, smelt the fragrance of the blooming grape, then came a gush of devotion in his young heart, and he said, "My Father worketh hitherto; I also will work"—and laid him down to his dreams and slept, preparatory to the work which fills the world.

There is something profoundly prophetic and grandly sublime in the language of the revelator in the fourteenth chapter of Revelations, and it has long swayed the popular imagination. The fire angel came out of the altar in heaven, and cried, "Thrust in thy sharp sickle and gather the clusters of the vine of the earth, for her grapes are fully ripe."

"And the angel thrust in his sickle into the earth and gathered of the clusters of the vine of the earth, and cast it into the great wine-press of the wrath of God."

"And the wine-press was trodden without the city, and blood came out of the wine-press, even unto the horses' bridles, by the

space of a thousand and six hundred furlongs."

Thus the great prophetic soul sought to unfold the awful events, and the terrors that must ensue, in the destruction of wrong.

The vine looking upon a vine becomes fruitful; and all languages have been enriched by its habits and characteristics; but more especially, the lands that gave birth to the four great religions of the world.

And the Divine flower of humanity, blossoming out in transcendent beauty and glory, simply styled himself "the true vine!" And And so when the Son of Man, the Son of God gave the finished expression of his mind, he took the vine as the symbol of the great greatness of his love and fellowship, and this emblem has impressed each obedient soul with sure prospect of meeting in their Heavenly Father's kingdom above. And they shall apprehend the perfect thought and inmost love of God, and this, perhaps, is the wine of the kingdom.

President—Mr. Green having come into the meeting since the paper was called for, we will call upon him. If you are prepared, Mr. Green, you may give us your paper on

PROPAGATION OF THE GRAPE.

Mr. President—I have no paper, but I will make a few remarks. There are many different ways of propagating the grape, but I suppose we might include them all under four heads; first, propagation from seed, second, propagation from cuttings, third, from layers, fourth, grafting. There are a great many modifications of all these, except the first. Propagation from seed is something that doesn't interest us particularly, except when we want new varieties. This method is not practiced except for that purpose. We usually proceed by gathering the seed of ripe grapes of some kind that we think especially desirable. The seeds are taken from the grapes and mixed with sand and kept through the winter. In the spring, they are simply planted as you would plant any other seed. The vines that come from them are fruited, and those that are desirable are kept, and those that are not, thrown away. I need not go into the details of this method of propagation, as no one here is particularly interested.

Perhaps the most important method and the one most commonly practiced is propagation from cuttings. There are different ways of making the cuttings, but this is the most common. Take a piece of vine having two or three buds, and cut the vine off just below the lower bud. It is customary to cut the vine off from both sides slantingly or wedge shape. It is quite material that it should be cut near the bud. If three or four inches are

left, it will all die away, and induce disease, as the wound will not heal properly. It is immaterial how many buds are used, but for convenience, it is customary to take in length about 10 to 12 inches of wood; or about three buds, sometimes less, sometimes more, but never less than two. Above the upper one, it is customary to leave a short piece of wood, an inch or more, in length. There is no particular reason for this, except that it rather protects the upper bud from injury, which might occur in a good many ways, also prevents evaporation. The time to make the cuttings is in the fall. They can be made in the winter or spring, but it is safer to prepare them in the fall and keep them over winter. The best method is to tie them into bunches of convenient size, fifty or a hundred cuttings in a bunch, taking care to keep the lower end even. They should be buried out of doors in well-drained soil, or if kept in the cellar care should be taken that they do not get dry, nor should they be kept so damp and warm as to induce mold. A method described by Prof. Budd is said to be a good one. It is simply to bury the bunches of cuttings butt ends up, covering with several inches of soil, and then with straw or some material to prevent hard freezing. In the spring remove the straw and rake the soil above the cuttings off level. Repeat the raking frequently and water if necessary. The heat from the sun warms the soil above the cuttings and callousing commences before the buds start to grow, which is an important matter. The callous is simply an exudation from the base of the cutting. After this has formed, and the roots have commenced to grow the cuttings should be planted in beds or nursery rows. In planting, open a trench with one side sloping at an angle of about forty-five degrees. Lay the cuttings along the side about ten inches apart leaving the upper bud about level with the surface of the soil. Cover the base of the cuttings with a few inches of soil and press down firmly with the hands or feet. It is very important that the soil should be firm about the cutting and particularly about the base. If the work is properly done, growth will commence soon, and the vine be large enough to plant in the vineyard at the end of the season, or they may be left to grow two seasons, but not longer. A modification of the above form of cutting is called the "mallet cutting," because of its resemblance to a mallet. This is made by taking a spur, or small branch for a cutting, retaining at the base a small piece of the shoot from which it grew. This form of cutting has no advantages over the ordinary form, except in the case of varieties that root with difficulty.

Here is another style. It is called the "one eye cutting," because only one bud is taken. It is seldom used out of doors. The reason why it is not is that it must be planted quite near the surface of the soil, and it would be difficult to keep the soil moist around it. This form of cutting is used to propagate in the green-house, or in hot-beds, or cold-frames, as they can be used only where it is possible to control the conditions, as to temperature and moisture. It is especially useful where vines are very scarce. In propagating from this kind of a cutting in a hot-bed or a green-house, it is best to use sand instead of dirt. This kind of cutting is planted very early in the spring, in February or March.

It is customary with some growers to plant the cuttings thickly in the cutting trench and then plant in pots as soon as roots form, shifting into larger pots several times during the season. Others plant closely in the trenches using no pots. In either case the vines are allowed to stop growth and harden in the fall. They are subsequently treated the same as though grown from long cuttings. This method has the advantage of economizing material. Two or three times as many vines can be grown from the same quantity of material as by the other method. It is most commonly practiced with new varieties and some others that are not easily grown by the ordinary method.

Another mode of propagation, not commonly practiced, is by layering. It is not possible, of course to get as many layers as cuttings from a vine, nor is the method so convenient as the other. To layer a vine simply lay it down in a trench next to the row and leave the trench open, until after the buds have started to grow, when about half of the young shoots should be broken off. You can, of course, allow them all to grow, and get a vine from every bud, but it is better to break off half or two-thirds, for they would not make very strong vines. After the shoots have made a growth of several inches the trench may be partly filled with soil, and completely filled a few weeks later. Roots will strike from every sprout and each will make a good plant by fall. If is desired to grow one vine only from a branch the cane may be bent down and covered with dirt, leaving the end of the cane uncovered. This is the best possible method by which to grow extra strong vines. A one year old layer is usually as large as a two year old vine grown from a cutting. Taking them in order, the best vines are formed from layers, the next from three buds, and the next from one bud.

Another method is to take the cuttings when the vines are young and tender, in the

growing season. This has been done very extensively, but it is not considered to be a good practice. It is believed by some that the vines will become diseased, if propagated in that way. I don't know whether it is true or not.

Another method of propagating is by grafting. It is not easy to describe the methods without cuts or vines. It differs from ordinary grafting as practiced upon fruit trees, only in some of the details. One method is to split the stock and insert the graft, but sometimes a coarse saw is used to cut a notch into one side of the stock and the graft inserted. The grafts are usually inserted below the surface of the soil. The dirt around the vine is removed, and replaced after the grafting is done. No wax is used, as it is fatal to the life of the graft. Grafting of the vine is done in the fall, or late in the spring. If the grafting is done in the fall, of course it is necessary to protect the graft in some way. The best way to protect it is to invert a flower pot over the graft, and throw dirt around the flower-pot, and in the spring it should be removed and the graft let grow. A better method is to prepare the scions in the fall and keep them until late in the spring, and do the grafting after the vines have begun to grow. If done at this season it is not necessary to cover the graft with a flower pot, but simply to return the soil, which is all that is required to hold the graft in place. Vines may also be budded but the practice is not common.

Mr. Janney — Some writers suggest, in making the cuttings, to cut the upper end so that the slope is opposite to the bud, to keep the sap from running down over the bud. Is that of any importance?

Mr. Green—I don't know, but I think not, because the sap would not run when the cutting is made.

Mr. Janney—That depends upon the time of the year that you cut. It might if you cut them in the spring.

Mr. Mitchell—Wouldn't it be better to put the cuttings into a box, and bury the box in the ground.

Mr. Green—I don't think that it would, as cuttings are very apt to mold when kept in a box. I have seen so much molding of cuttings in boxes that I think it is a better plan to simply bury them in the ground. There is no plan so good as burying them out of doors where the drainage is good.

Prof. Lazenby—One word in regard to the advantages of grafting. Grafting is seldom practical except when it is found that a mistake has been made in buying a vine. When you have a vineyard of some extent and the vines are thrifty and have attained some age,

if you graft those vines that are not satisfactory, it is an advantage. A good deal has been done in Western New York in that way. They use an instrument that is made for the purpose. It consists of two fine saws in one handle at a little distance apart. This is used just as Mr. Green described. As there are two fine saws instead of one course one, it does a neater job. In connection with this they use another instrument which consists of two parallel blades, placed at the same distance apart as are the saws. With this tool the scions can be cut to exactly fit the gash made by the saws. I have seen, in one case, a vineyard of six acres grafted very successfully with these tools.

President—Are there any other remarks upon this subject? If not we will pass to the next, a paper, by Mrs. O. W. Aldrich, entitled

GRAPE DISHES.

The grape when fully ripened, is so delicious when eaten in its natural state, and its appearance so much superior in this condition to any of the dishes which are made from it, that if no dishes could be prepared, aside from the dish filled with the beautiful and lucious clusters as gathered from the parent stem, there would be comparatively little loss in this country, when we can so easily secure the various other fruits of the summer and autumn in their season; and yet even from the grape in its various stages, there may be prepared by the skillful housewife many a toothsome dish to tickle the palate and please the fancy, not only of the boys and girls, but such as are not unworthy of the notice even of the lords of creation. Among the fruits for jelly, there are few which are superior to the grape when about its full size before it begins to color.

To make the jelly, select the perfect berries, cover with water and boil until soft, run through a colander and strain so as to avoid the mixture of the pulp with the juice; to three parts of juice use two parts of granulated sugar; boil one quart of this mixture in a porcelain kettle about ten minutes over a hot fire, clarifying with the white of an egg and skim carefully, and when done, set the glasses for two or three days in a sunny window, after which, cover and seal up as other jellies.

Grapes are also canned when about half grown, and are a good substitute for gooseberries for sauce or pies. They may also be prepared for sauce or pies by separating the skins from the pulp; heat the pulp and run through colander, add skins to the pulp and sweeten to taste, boil five minutes for pies, and ten minutes for sauce. By using the pulp alone with the juice expressed from

the skins, a very nice marmalade can be prepared.

Grapes may also be spiced, and are very nice when properly prepared. Select uniform bunches of medium size with perfect berries, and place in a jar; prepare the vinegar spiced to your taste as for other fruits; pour over while hot. Pour off every day for several days, and return hot the last time, add a little more sugar and boil until the syrup suits your taste, pour over hot and seal as other fruits. If carefully done, the clusters will be as perfect as when picked from the vine.

Grapes may also be canned to present a fine appearance. Select the largest berries when not too ripe; fill the can about three-fourths full, prepare a syrup of granulated sugar about as thick as for the table, and while warm fill the can with the syrup, place the cans in the boiler, placing a piece of board under them, fill the boiler nearly to the necks of the cans with cold water, and let boil until the fruit is heated through, and seal while hot.

For those who do not wish to use alcoholic wine, the unfermented juice of the grape may be preserved, and makes a delicious drink for summer. Express the juice from the grape (white grapes are preferable), sweeten to taste, using from one-half to one-fourth of a pound granulated or loaf sugar to the quart, place in a boiler, fill to the neck of the bottle, boil half an hour, filling the bottles as the scum rises; cork, seal the bottles while hot, and keep in a cool cellar. This wine is nice for sacramental or medicinal purposes.

There is also another variety of wine which is very nice. This can be made by taking the young shoots of the grape vine when pruning about the first of August, strip the leaves and cut up the young branches and tendrils an inch or two in length, put these in a jar and cover with boiling water; let stand about six or eight days, strain off the juice and add three pounds of sugar and one of raisins to the gallon of juice. This wine improves with age, and while a little sweet, is a very pleasant drink. A little alcohol adds body, but is not necessary if the wine is bottled and not drawn from the cask.

President—The next subject is a paper entitled,

ESSENTIAL REQUISITES OF A PERFECT GRAPE.

In order to progress we must have an ideal towards which we are working. Indeed to progress means to advance towards something, to step from our present plane to a higher, nearer, that conceived to be the loftiest. In order to near that loftiest plane, we must locate it in the mind.

The sculptor has clearly pictured in his

mind the statute he works out of stone. It must first be in his minds embrace completely and firmly fixed, before the chisel is applied to reproduce it. The intelligent breeder of animals has his ideal animal pictured to him as clearly as the most vivid delineation upon canvas, and knows every point towards which he is to strive in his efforts to improve his flocks and herds. One step in the process of improvement taken in disregard to the ideal picture or contrary to its dictates, may, and more than likely will, result in turning to nought the whole of the labor previously spent on improvement.

Although the conditions can not be so completely controlled by man in plant reproduction, this is nevertheless just as true in horticulture as in stock breeding or any other industry.

The grower must not expect to attain the ideal at a single bound, nor with a few long strides; but by slow degrees, such as the inexperienced observer would not note, and the keen eye and accurate judgment alone recognize; and it is only by patient, oft-repeated effort that the ideal is approached.

The laws of variation and heredity enable the experimenter to realize his ideal. The former permits the progeny to deviate from the parent type, a part of which deviation may be in the line of the improvement sought; and the latter transmits the quality thus secured to succeeding generations. Another point not to be overlooked in this matter is that of correlation. One change is apt to be accompanied by another, and all that is gained in one direction may be balanced by loss in another particular. Thus albinism is usually accompanied by physical weakness, while vigor and dark colors are correlated. An increase in the size of fruits is associated with loss of flavor or quality. That is, as Goethe expresses it, "in order to spend on one side, nature is forced to economize on the other side."

Whether the ideal grape, "the perfect grape," shall be produced, and when if at all, depends largely upon the judgment exercised in fashioning the ideal, and the intelligence engaged in improving the grape and striving to attain the ideal. For, once fixed and a determination to reach it, the perfect grape will be produced, though it may be by stages of advancement unperceived by any except the closest observers of the most persistent intelligent workers.

But what would we consider a perfect grape? What are the essential requisites? These:

1. A large amount and the proper proportions of sugar and acid.
2. A good flavor.
3. A tender, melting flesh.

4. Large and compact clusters.
5. Large berries, firmly adherent.
6. Few and small seeds.
7. A thin skin.
8. A fruitful, vigorous vine.
9. Good keeping qualities.
10. Longevity.

Perhaps a fuller account of these requisites will bring more clearly before us, "the perfect grape" for which we are looking.

1. Should there be but a minimum amount of sugar and acid, the grape would be insipid. The Concord and the Salem possess this defect to some extent. Should there be a large amount of acid, and little sugar, the grape would be sour. The Hartford Prolific is an example. Too much sugar for the amount of acid, or rather too little acid for the sugar, is a fault of many of our grapes—the Delaware for example; but it is not a very objectionable feature. The Catawba is a good example of a grape with about the proper portions of sugar and acid in a moderately large amount.

2. A grape that does not possess an agreeable flavor is of little value for eating fresh, though perhaps of some value in the kitchen, where the flavor may be supplied artificially. The flavor is an element aside from the taste given by the sugar and acid. We speak of the grape as having a musky, or vicious, or aromatic, or foxy flavor, or perhaps of an agreeable, or a delicious flavor, each of which is independent of the sugar and acid. Some grapes possess a fine perfume, also, which is a desirable quality, and should be mentioned in connection with the flavor, although it may not bear any direct relation to the latter.

3. The flesh should be tender, melting in the mouth. Goethe, Salem, Witt, and Allen's Hybrid may be cited as possessing this quality, while Hartford Prolific and Vengano are examples of a tough flesh. The nearer the flesh approaches a liquid condition the better. Freedom from pulp, as the Herbemont, and Adriondac, is desirable.

4. Too small bunches is a fault possessed by several excellent grapes, notably the Delaware. A large bunch, like that of the Niagara, or the Wilder, or the Agawam, or the Empire State, is a desirable quality. The bunches should also be compact, like those of the Delaware, Clinton, Ives, etc. One objection to the Catawba is the looseness of its bunches.

5. The berries should be large, uniform in size and firmly adherent to the stem. The most prominent of the defects of the Northern Muscadine is the falling of the berries as soon as ripe. The persistence with which the berries cling to the stem is one of the desirable fea-

tures of the Catawba, the Niagara and the Empire State. Large berries like the Catawba, Niagara, and Rodgers' seedlings—as Wilder, Goethe, etc.—should obtain. The small size of the berries is alone sufficient to exclude the Delaware from the list of perfect grapes. The color might properly be mentioned in this connection. Whether it is black, red or white, is perhaps of little moment; but the color should be clear and bright. All dull colors are objectionable. The presence of bloom is also desirable, especially on the dark grapes. It adds to the value of the Concord and Adirondac.

6. As we do not depend upon the seeds for reproduction of the grape, the fewer and smaller the seeds the better. Of course we must depend upon seeds for the improvement we are to make; but when the "perfect grape" is once secured, there will be no further need of seeds.

7. The skin of the berry should be thin, making but a small part of the grape. But it should be sufficiently tough to prevent breaking in ordinary handling. A tough skin is especially necessary for marketing, but for home use the more tender the skin, within certain limits, the better. A tough skin is also sometimes desirable in order to better resist the depredations of insects, supposed to injure some varieties. Among the varieties possessing too thick a skin are the Lydia and the Isabella.

8. Although a grape possess all the other requisites and not be fruitful and vigorous, it could not, I think, be pronounced a perfect grape. No one will devote much time to a vine that returns but a few clusters a year for his pains. A shy bearer cannot be an ideal grape. Vigor of vine includes not only good growth, but hardiness and freedom from mildew and other diseases liable to attack poor growers. The "robust health and rugged hardiness, productiveness and general adaptability to all soils," of the Concord have long been important factors in popularizing this variety; the same must be said of any grape to be of the first importance. The Empire State and perhaps the Pocklington, of the new grapes, possess these features. The Jefferson and Isabella are sufficiently productive, but not hardy enough for this latitude. Evenness of ripening is a point to be observed in connection with the fruitfulness. The berries upon a bunch should all ripen at the same time. The variability in time of ripening is a great defect of the Diana. Freedom from rot is another important factor in the series of qualities of "the perfect grape." The Vergennes, a good grape in many respects is subject to rot in some localities. The popularity of the Niagara may in the

future be diminished by its being subject to rot and mildew in some sections.

9. Good keeping qualities may not be regarded by some as essential to the best grape; yet we can not say that we have attained perfection in the grape until, with the other qualities, we have a good keeper. Some varieties perish almost as soon as ripe, while there are others that may be kept the year through. A grape that will retain its freshness and flavor for a long season, is a valuable one, though it may not be of prime quality to begin; but good keeping qualities coupled with all the other requisites will certainly be an acquisition.

10. And lastly, but perhaps not least, the vine should be longed lived. It should not be necessary to renew the vineyard every five, ten or twenty years, but the vine should live indefinitely, possessing vigor throughout its whole life.

When we have produced a grape possessing all these qualities, it will, I think, have "the essential requisites of a perfect grape." Perhaps when the ideal here figured shall be attained, other qualities will be found desirable. In fact the standard of perfection in the grape, as in all products of human labor, is constantly advancing. Each progressive step points to yet higher, better, nobler things still to be achieved.

President—Any remarks upon the paper just read?

Member—Mr. President, he spoke about grapes ripening all at once. I would like to know whether he knows any way to make grapes ripen all at once?

Mr. Devol—I don't know any plan to get them to ripen all at once, except we get the perfect grape; and that was what my paper was for, to point out the qualities necessary to the perfect grape. If we can get grapes all of a size, they will be apt to ripen uniformly.

Mr. Aldrich—I would like to know whether the idea of the bunches being compact is necessary to the perfect grape, and whether some of our grapes are not too compact now? Are they not apt to be attacked with rot, when too close together on the stem? In our stone fruits any variety that bears its fruit too close together is much more subject to rot than when it is separated a little.

Mr. Janney—That is one objection I have to the Delaware. When one gets a well grown bunch of Delawares, he has to break them, almost, to get them off the stem, they are so compact. They are too tight altogether.

A lady member—A neighbor of mine who cultivates a few vines tied a paper bag over each bunch, and in that way they ripened beautifully. They were large and seemed to ripen very evenly.

President—That is frequently done, even in large vineyards. They buy the bags by the million, and hire boys and girls to put them on, and it pays, too.

Prof. Lazenby—I think that if another quality that was mentioned as essential be present, that is uniformity of size, we have less trouble about the inequality of ripening. We have generally noticed that inequality of ripening is largely due to inequality in size of the grape. The large ones ripen first.

Mr. Parsons—Isn't it true that the grape that blooms late is the one that requires the longer time to ripen? My experience with the Concord is that the chief cause of the unevenness of its ripening is that when it has thrown out quite a quantity of fruit, and the green fruit is of a considerable size, still it continues to bloom.

Mr. Janney—My observation teaches me that occasionally seasons come in which the Concord ripens unevenly, but I have concluded that it was owing to the unhealthiness of the vine.

Mrs. Aldrich—I would like to ask if any one has succeeded in keeping the grape in a natural state after its season. I have tried a number of times myself, and always failed, and if any of the other ladies have been successful I would like to hear about it.

Mr. Janney—One fall, I had a Catawba vine full of very fine grapes. I had a tin case about two feet square, and in this case I placed a layer of batting and then a layer of grapes and filled the case full. I put them away when thoroughly ripe. The grapes themselves kept perfectly until about the middle of February. The last, I think, we ate about the last of February. The stems, however, all disappeared. The grapes were all loose, but the grapes themselves kept in perfect order. How much longer they would have kept, I do not know. We could not keep them, they were so good.

Member—Where did you keep the box?

Mr. Janney—I put it in the cellar that was dry and moderately warm.

Mr. Parsons—We tried this plan several years ago. We gathered grapes fresh from the vine, and then dipped the stem of each cluster in melted wax. We packed them something after the method described, though not in a tin box, but between batting, one thickness of cotton being between every layer. But they were so good that we did not learn how long they would keep. We ate them rather early. We have never tried it since, because we generally get rid of all we have in their season.

President—Has any one had any experience in packing in stone jars and burying them in the ground?

Member—A lady told me that she used a twelve gallon jar, narrow at the top. She sealed the stems, and put in a layer of leaves and a layer of grapes—I do not know whether they were grape leaves or forest leaves—and buried the jar. I do not know whether she covered it all over, or left a little above the ground. She said that she kept them until February.

President—I have read of such a process, but have no personal experience.

Mr. Aldrich—This would depend, of course, upon the kind of grapes that were used. The Catawba is probably one of the best keepers that we have, and the Vergennes is very nearly equal to it in that respect. There is one other point. I think, in keeping grapes, you must wait until they are thoroughly ripe before they are packed. A green grape, or one that is not dead ripe will scarcely keep at all.

President—The next is a paper by William B. Alwood, on

SOME INSECT ENEMIES OF THE GRAPE.

Mr. President, Ladies and Gentlemen—I must apologize to the Society for not having a better paper prepared. I prepared it very hastily for the last meeting, but as I did not read it then, I intended to revise it, but have not found time to do so. I will give you the very brief paper that I prepared over a month ago.

It is always more pleasant and interesting to me to hear one discuss a subject from impressions made by actual contact with the thing itself; hence when the worthy Secretary requested me to discuss this subject in a short paper I was loth to do so, not having had actual experience in a vineyard. However I am familiar with a few of the insects affecting the grape, by actual contact with them, and slightly familiar with many more through the work of other investigators.

It is my opinion that very few of us present here are interested in grape culture to such an extent as to make a minute study of its insect enemies a matter of special importance to us, hence I will treat the subject briefly that none need be wearied.

Probably the most dangerous attacks of insects to the grape as well as other crops are those affecting the roots, as their position conceals them from view and renders their attack a complete ambush, that is we are surrounded and whipped before we know of the presence of an enemy.

This is very often the case in the culture of fruits and grains, and is to quite an extent true of grapes. However we are blessed or perhaps I should say cursed with but few insects attacking the roots of this fruit. The

first I will speak of in this connection is the gigantic prionus beetles which are not noted as being particularly injurious, yet they should be promptly attended to whenever they are noticed as making an attack. This beetle and a root borer aside from the Phylloxera are about the only insects of importance which affect the roots of grapes. I would like to add here a word which some of you may not have noticed in regard to identifying the larvæ of beetles and moths; the former have in all cases that have come under my notice but six legs, these on the anterior segments while the larvæ of the latter always have in common with most lepidopterous insects sixteen legs, six on the anterior segments and ten on the posterior segments which are simply temporary arrangements or prop legs.

The root borer spoken of is a moth and its larvæ is much smaller than those of the prionus beetles. Both of these can best be fought by exposing the roots and destroying them by hand or pouring in hot water or in some other convenient manner accomplishing the work. I know of no remedy worthy of notice, except some sort of hard work. The Phylloxera is a terror, and has proved a national calamity to France and has done immense damage elsewhere. It is a native of America. Europe has bequeathed us the hessian fly, the imported cabbage worm and many injurious insects. I doubt if in all the category she has given us one that has been such a pest to any portion of our country as this insect has been to France. The best scientific talent of the present generation have attempted to destroy this insect with but little success.

There are two species or forms of the Phylloxera, one infesting the leaf and the other the root. The latter is so much more important that we speak only of it. In common parlance it is a minute root louse, possibly one sixty-fourth to one thirty-second of an inch long and considerably resembles the ordinary plant lice with which we are all familiar. Under favorable conditions they breed at an alarmingly rapid rate and exhaust the roots by sucking out the juices. Decay follows and speedily the plant is dead. Fortunately for American growers our native vines are much more able to withstand their attacks than foreign stocks, hence in well kept vineyards we enjoy considerable immunity from their attacks. This is a strong illustration of the "survival of the fittest." Native American species of the grape have had to withstand this enemy doubtless from their earliest existence, hence those which have survived are nearly proof against it.

This fact is a great boon to grape culturists the world over and the most hardy American

stocks are now largely used for grafting purposes. Many remedies have been tried for the pest, but none have proven to be specifics. Among these are flooding during September and October, so as to completely drown out all the lice. This is from the situation of most vineyards in this State, entirely impracticable. Bisulphide of carbon has been used for injecting into the soil. This when thoroughly applied may be a remedy of considerable importance. But the time and cost of application would be considerable. I will state here that I have in connection with Mr. J. D. Riggs, a student at the University, made a very complete pump for injecting substances beneath the soil, and which I would be glad to have any member try for this or any other root insect. The insecticide used in it must be liquid. Very fortunately the Phylloxera are preyed upon to a considerable extent by parasites which aid in keeping them in subjection.

As affecting the vine or branches I will only mention the grapevine bark-louse, a scale insect, and the grapevine wound gall. The former sucks the juice from the stems and the latter punctures the stem and deposits her egg, which when hatched causes a gall to rise on the stem. Neither are very injurious. The leaves are injured by a host of insects, the most prominent of which are the larvæ of a number of sphinx moths, the leafhoppers, several of the wood nymphs and a number of insects of lesser note. I have never known any of these to be specially injurious, hence do not attempt to describe their attacks or give remedies, except to state that the arsenical poisons are in my experience safe, convenient and sure. They must be handled with care and not applied where fruit is soon to be picked. Also, I wish to call attention to a trap for leafhoppers which Professor Lazenby told me about. It consists of a frame covered with muslin or canvas. This is coated with coal tar and carried on one side of the row of vines, while a second party jars the vines from the other side. This trap I believe would be a perfect success. When covered with insects they may be scraped off and it is ready for use again. Attacking the fruit I need only mention the grape berry moth and the grape curculio as of some importance; the grape seed insect was some years since thought to be a dangerous pest but now has almost disappeared. The two first named do as a rule a small amount of damage, yet the berry moth has in some instances done serious harm. It is an imported insect, Europe is its native home. It can only be suggested as a remedy for it that the infested fruit be gathered and burned while the larvæ is yet at work or that leaves be raked up in autumn

and burned as it usually pupates among them, in that way many might be destroyed. I want to add just a word as to bees injuring the fruit of grapes. Although the burden of testimony is against our little friends I am loth to believe that they break the skins of grapes. To be sure I have observed them sucking out the sweets from injured specimens, but never observed what I could believe to be an original injury. But I have observed crickets, Katyids and grasshoppers injuring the fruit, though I do not find this fact stated by entomologists.

This present summer where persons were so sure the bees were injuring the grapes to my certain knowledge, the original injury was done by one of the insects just mentioned. I observed crickets committing the actual depredations and found katyids and grasshoppers in suspicious places.

I will state that in talking with Prof. Riley, Chief of the Division of Entomology, Washington, who dropped in on me a few days ago, on this very subject, he said that in France, where he visited this summer, they were using bisulphide of carbon more than any thing else for the Phylloxera. It is probably the best known remedy.

I have here a couple of specimens of the Sphinx Moths, which I will pass around and you can look at them. These moth deposit eggs, and in a few days they hatch and grow to be large larvae; but they are preyed upon so much by birds and parasitic insects that they do but little injury.

Member—I would like to ask if your attention has been called to the devastation of the cut worm upon the grape vine?

Mr. Alwood—No; I have never had my attention called to that.

Mr. Aldrich—I have noticed in the last report of the Michigan Society that they crawl upon the vines and trellises and cut all the leaves off, and, so far, no remedy has been found.

Mr. Alwood—Is it the ordinary cut worm?

Mr. Aldrich—The ordinary cut worm. I think the species was spoken of, but I do not know what it was. I think there were two species. It described the worm that was doing the most damage.

Mr. Alwood—I want, in this connection to exhibit a very simple contrivance which has recently been patented, and is the best instrument for spraying insecticides that I have ever used. It is simple and can be readily used by any one. The apparatus consists of a nipple and chamber which can be readily screwed on to the discharge pipe of a force pump. The nipple is of solid brass pierced by an orifice of greater or less diameter, according to the amount of spray desired. The cham-

ber is a brass tube about three inches long and of diameter to suit the size of the orifice in the nipple. This chamber screws on to the end of the nipple, and its outer end is covered by a wire gauze of fine or coarse mesh, according to size of stream from nipple. The stream must be projected against the gauze covering end of chamber with considerable force, when it is cut into the most perfect spray I ever saw. I am of the opinion that the practical development of this machine will make comparatively easy, the destruction of insects on a large scale.

The largest nozzle which I have here is called the No. 4, and projects a sheet of spray twenty-five feet. This nozzle was invented by Mr. A. H. Nixon, of Dayton, who is now endeavoring, with every prospect of success, to adapt it to hand and horse power machinery as to make the fighting of insects on a large scale an easy matter. I have a complete machine at the University which I will be pleased to show to any one who cares to examine it.

President—Any other remarks upon the paper just read?

Mr. Aldrich—I notice this year that upon the Concord that were left to ripen thoroughly upon the vines, the attacks of insects made very serious inroads upon the fruit. I wanted to let my grapes thoroughly ripen. This leads me to say that spreading copperas over the soil is not a preventive of rot. I tried it, and while I do think that it may have checked it slightly in the first attack, the second attack was with double force. I wished to let my grapes become perfectly ripe, and I think a quarter of the grapes were destroyed by insects. It seemed to be done mostly by wasps. I saw them attacking the fruit and destroying it badly, and some honey bees also, but I thought the fruit was first broken by the wasps. They seem to attack it and suck the fruit all out and leave the dead skins and seeds.

Prof. Lazenby—I would like to ask if you had any evidence that it was wasps? Wasn't it from some other cause that the skins broke?

Mr. Aldrich—That may be, but I noticed that the wasps were attacking them they were fully ripe, and at a time when one would not expect that they would attack them.

Member—I would like to ask if any one has noticed the difference between dark and the white grapes, as to immunity from attacks of insects?

Mr. Aldrich—I have probably twenty white grape vines, and my white grapes were nearly exempt from the attacks of insects.

Prof. Lazenby—It is considered that the white colors in some of our fruits is a very great protection from birds, and there is no

dout that they are attracted by the bright color—birds as well as insects.

Mrs. Aldrich—Last year, when our grapes began to rot, I went out every morning and cut off all the stems that I saw rotting. I took the perfect green grapes and made them into jelly. I found that the rot extended to only three rows, and when I got done, I found that I had five gallons of jelly. In this way, I prevented the rot from going farther than the three rows. This year, I did not have the time to bother with it, and our grapes rotted much worse.

Mr. Janney—There are two things against the theory of bees attacking grapes. In the first place, I think the bee has not a biting apparatus to bite the grapes; but hornets, yellow jackets, and wasps can bite, if they choose, but I have never known a case when any one of them attacked a fruit of any kind until the fruit was first broken into.

Mr. Alwood—The bee is supposed to attack the skin of the grape with his hairy tongue. When any member of the Society, or any of their friends notice any peculiar attack of insects, if they will drop me a card, I will consider it a favor to be given an opportunity to look after the matter. It will give me an opportunity to study this subject which I am now making my business.

Mr. Parsons—Some years ago, we had about twenty swarms of bees. We had grapes and peaches. I had heard that bees would not eat peaches, unless something else had given them an opportunity, or grapes either. I took some clusters of grapes that were quite ripe, and put them near the hive, and in a short time, they were covered with bees. When I looked at them shortly afterward, they had left the skins there and some stems. It was a good year for peaches, and they were visited with wasps and hornets and bees, and I never saw the wasps so thick but that there were bees among them, and they seemed to work together. Somehow, I have a great suspicion of the bee.

Mrs. Lovejoy—I agree with Mr. Parsons that the bee does great injury to grapes. I have several rows of Concord. The skin being very thin, it is injured by the attacks of bees. I know it to be the work of honey bees, because my neighbor keeps bees. I am very sure that in some way, they destroy whole bunches of grapes.

Mr. Aldrich—It has been decided that bees do destroy grapes. I saw, not long ago, a verdict of a thousand dollars rendered against a bee keeper in California, in favor of a grape grower.

Mr. Alwood—I wish to say I have never observed the fact. I was aware of this decision in California. However the government division of Entomology has by careful experiments practically settled the matter that bees do not break the skin of grapes.

Mr. Green—Bagging grapes serves quite as well to keep off insects as it does to prevent rot. We tried it last season, but we couldn't keep the boys off.

President—A the last meeting of the State Society, I think, this was discussed. The owners of the vineyards said they employed girls and boys to bag their grapes, and they could put on several thousand bags a day. They said it paid them amply to bag all their grapes.

Mr. Green—I don't think it would work well with such varieties as the Concord, that have a thin skin, because the skin is thinner when they are bagged than when they are not. It would be so very thin that the grapes could not be marketed. It would do with varieties that have a thick skin.

President—The next in order is miscellaneous business.

Mr. Devol—Mr. President—I wish to report the following sum received:

From W. B. Alwood, membership fee and dues for 1886, \$1.50. And also the following bill:

To Emma Oviatt, Dr.

Oct. 30, '86, to reporting September meeting of Society..... \$5 00

Upon motion, the bill was ordered paid.

Mr. Devol—Mr. President, by a motion made some time ago, the Society has been meeting at 3 o'clock. The constitution requires that we meet at 2:30. Now, as our meetings are full and we can occupy all the time,—something different from what it was a few years ago,—I think it would be well if we met at 2:30. I have observed lately that a number of our members have been obliged to leave before the meeting was closed, and half of our last meeting's programme had to be carried over to this meeting. I think hereafter we should meet at the time required by the constitution.

It was moved and seconded that the Society meet, hereafter, at 2:30 P. M., the time required by the constitution. Carried unanimously.

The Society then adjourned.

W. S. DEVOL, *Secretary*.

J. M. WESTWATER, *President*.

Columbus horticultural Society.

BOARD OF TRADE ROOM, }
SATURDAY, NOV. 27, 1886. }

President—Three o'clock having arrived, which is half an hour behind the time, the Society will proceed to business; I hope that those interested in this meeting will come in due time.

The Secretary will please read the minutes of the last meeting.

Secretary Devol—As the minutes, including the whole proceedings have been printed, as before, and as it will take a great deal of time to read them, I think it should be dispensed with.

President—First, then, in order is the election of members. Has any one any names to propose for membership?

Mr. Parsons—I propose the name of Mr. Warren Phelps of Westerville.

Member—I can second that motion very cordially. I have known Mr. Phelps for a number of years, and he will make a good member of this Society.

Mr. Phelps was unanimously elected a member of the Society.

President—Reports of special committees are next in order.

Secretary—I believe that there is but one special committee. I am chairman of that, and we have no report to make to-day.

President—Any communications or correspondence, Mr. Secretary, to be read to-day?

Secretary—There is nothing.

President—Then we come to the business of the afternoon, the regular papers and addresses and discussion thereon. According to the program before me, the first is "Apple Trees; Selecting Varieties and Setting a Family Orchard," by Col. G. S. Innis. He is not present. Has he sent anything, Mr. Secretary?

Secretary—I have not received anything. He said if he could not be present, he would send his paper to be read, but it has not been received.

President—Then we will be obliged to take this up out of order. The next is "Apple Seeds; or Natural History of the Apple," by W. J. Green.

Mr. Green—I think it is very unfortunate that Col. Innis is not here, because I think his subject is a great deal more interesting than mine. I will make mine as short as possible, leaving out a little of it, because I think

we can to-day make the discussion more interesting than the papers.

APPLE SEEDS; OR NATURAL HISTORY OF THE APPLE.

The apple has been styled "the king of fruits," and not inappropriately, since it stands at the head of a family that may well be called royal. The order Rosaceæ to which it belongs, includes one thousand species of trees, shrubs and herbs, the greater number of which are natives of the temperate zone. They are characterized by having alternate leaves, with stipules, and regular flowers. The sepals are usually five in number and united at the base. The petals are the same in number but are not united. The stamens are variable as to number, but usually many, while the ovaries vary in number from one to many. Very many useful plants are found in the order; some having medicinal qualities, and others are highly prized for ornamental purposes, while others give us some of the choicest fruits of temperate climates, such as the apple, pear, quince, apricot, nectarine, almond, peach, plum, cherry, blackberry, raspberry, and strawberry. The genus *Pirus* includes the apple, pear, quince, Siberian crab apple, sweet scented crab apple, and several other species. The members of this species are characterized by having a five cleft urn shaped calyx; five rounded petals; two to five styles; two to five celled fruit, called a pome; leaves simple or pinnate; flowers white or rose colored. In the classification of fruits the apple is ranked with drupaceous fruits, but is itself called a pome to distinguish it from true drupes, or stone fruits. The fleshy or edible part is commonly regarded as the enlarged calyx. In its earlier stages this part of the fruit has the appearance and function of leaves. The color is green, showing the presence of chlorophyll. Stomates, or breathing pores, are also present, and the processes of digestion and assimilation go as in ordinary leaves. Immediately after pollination has taken place the petals wither and drop, having fulfilled the office of attracting insects. The stamens also disappear but the calyx remains and assumes new functions. The limbs of the calyx remain green for a time, and probably continue to perform the office of leaves until they finally wither; but the body, or tube, commences to enlarge at once, and gradually loses the function of

leaves. In it, at this time, are found chlorophyll, cellulose, starch, sugar, and a large proportion of acid. As growth proceeds, the chlorophyll gradually disappears; the sugar increases in quantity, at the expense of the starch, while the acid also diminishes in quantity. This part of the fruit is not only useful to man, but doubtless served in an important manner in the dissemination and perpetuation of the species, as it offered an enticing food to animals, while the small, well-protected seeds if eaten, were uninjured in the process of digestion. As to the successive stages of development of the apple we can do no more than conjecture, but it is safe to say that the forms or varieties that have been preserved are less in number than those that are lost; while the rate of progress has been exceedingly slow.

In a state of nature the requisite of a perfect apple would be numerous well-developed seeds, with no more of the fleshy part than is necessary to induce animals to eat it. Natural selection would thus keep the apple small in size, but prolific of seeds. In its natural state the apple tree is more or less thorny. Whether these thorns disappear by cultivation, or selection by man was commenced with thornless varieties, is not certain, but the latter seems probable. There are two quite distinct forms of leaves, one being somewhat downy, the other smooth and provided with an extra row of pallsade cells. The latter form is found indigenous on the high, cold table-lands of Europe.

If we adopt the evolution theory to account for the origin of the apple, we have less trouble to harmonize facts, than if the belief in a special creation is accepted.

Asia has been supposed to be the original home of the apple, but the fact seems undeniable that it is found indigenous in Europe as well. How it became so widely disseminated in prehistoric times is a difficult question to answer, unless we allow some other agency than that of man as the probable cause. De Candolle in his "Origin of Cultivated Plants" says: "I consider the apple to have existed in Europe, both wild and cultivated, from prehistoric times. The lack of communication with Asia before the Aryan invasion makes it probable that the tree was indigenous in Europe, as in Antolia, the south of the Caucasus, and northern Russia; and that its cultivation began very early everywhere." Doubtless its cultivation began early because it was in a very advanced state of development when man came upon the stage. When we consider that what we call a variety, is simply a very slight modification of another variety, we are compelled to ad-

mit that the change wrought by cultivation has not been so very great, although important. If we should compare cultivated with wild varieties, we should find wide differences if extremes were taken, but it is probable that selection was begun with the best wild types, and these are not very far removed from cultivated types.

The principal structural changes that have been brought about by man are in the fruit. The edible part has increased, while the number of seeds has decreased. Thorns have also disappeared; that is, they are not present in cultivated sorts, but they often appear in seedlings of such varieties.

It is very doubtful if we ought to consider the selection as carried on by man as selection in the true sense, as no permanent type has been fixed by him. He has simply selected such forms as have been presented to him by accidental variation and preserved them by budding or grafting. Cultivation has doubtless had the effect of overcoming, to some extent, the stability of the species. The forms that appear now may be more numerous than formerly; that is, a given number of seeds may produce a greater number of dissimilar varieties, but even that may not be true, although probable.

Pliny says that the Romans grew twenty-two varieties, but the number in existence at that time must have been much greater. We have a very incomplete record of the varieties that have appeared since that time, but the list is a long one, including thousands. North America, the new home of the apple, is more to its liking than the old. Nowhere else does it thrive so well; nor have such desirable varieties appeared in the old world as here. Although there are more than two thousand recorded varieties, the list of really valuable sorts is very short indeed. A score would take the cream of the list, while the American Pomological Society records only 337 for the U. S. and Canada, only 50 of which are highly recommended. We have come to realize the necessity of more hardy sorts for some portions of our country, and Prof. Budd, Mr. Gibb and others have given the matter considerable attention. They have been importing hardy sorts from Russia to meet our wants, while Peter Gideon and others have taken up the work by growing seedlings. Our fathers thought that they had brought the apple to perfection nearly, but we realize that we still need something better than we have yet seen, however, in the inherent tendency of the apple to vary we have much hope.

President—The paper just read is before

you. Any remarks upon the ideas suggested by Mr. Green?

Mr. Post—I would like to make a few remarks upon that paper. One particular item that I would like to call attention to, after an experience of thirty years in growing seedlings, is the fact as stated by Mr. Green, that there is a remarkable persistency in the wild varieties in maintaining their wild thorny habit. You may take the Russett, and grow a hundred seedlings from it. No two of them would be alike, nor any one like the parent tree. But this persistency of the wild variety will be shown by the presence of thorns on many of the seedlings.

As far as my experience goes, there is no absolute way of telling which will bring a valuable fruit, by the outside appearances. The leaf of the wild type and the thorn, perhaps, may be present, and the very next seedling may be one of the finest varieties.

In Linconshire, England, there was a sand-bar which was of much higher altitude than the surrounding fens, and upon that was a crab orchard, which, according to history, was really quite ancient. But as the bar extended with the prevailing winds, and the seeds were carried from those trees, the varieties improved right along; and the fact of the matter is, that some of the finest varieties of apples of England originated here. The English Golden Pippin, which is an apple about the size of the Grimes' Golden Pippin, was supposed to have originated there. It is only to be supposed that hybridization took place; and consequently occasionally very fine varieties came. Hybridization of the apple is far too extensive a subject to go into; but I think that anyone who has tried it has met with the grandest disappointment, when they have picked out two fine varieties and tried to cross them. High cultivation has weakened the constitution, and if you take two of these, and expect to get anything very fine, perhaps you will get nothing but a weak seedling; and a good many of our cultivators go and get some wild stock and cross some fine variety on it, hoping thus to improve the stock. That rarely happens. The wild stock has the stronger constitution, and its characteristics predominate.

There are one or two further points in that paper, if we had time, that I could speak upon. There are some very valuable suggestions in it.

President—Any other remarks?

Mr. Parsons—I was in Iowa this fall, and I had the pleasure of seeing some extensive orchards. Some men there, twenty or twenty-five years ago, had conceived the idea of not only getting the apple in a high state of per-

fection, but of realizing the ideal apple, and they became very much enthused over it. In one orchard of near fifty acres, there were only two apples that have survived, one the Snow, and the other the Willow Twig. This fall, out of the thousands of trees, only these two varieties bore. The Iowa climate and the winds may have something to do with it, and the situation in a cyclone district. There is more in the soil than in the winds, I presume.

Member—What is the character of their soil?

Mr. Parsons—It is rich loam. The loam is black, and the soil is from two to four feet deep.

In the State of Massachusetts, a few years ago, I visited an orchard that I knew when I was a boy. They were Baldwins, bearing apples as perfect as they did forty years ago. From this orchard, they ship the Baldwins to England, and they get a premium on the Baldwin apple above all the apples produced in the State. The position is not any better than any other place in the State, but there is something in the soil particularly adapted to this apple, for I could see but very little evidence of attention. The trees looked about as ragged as they did when I was a boy. When I picked apples in the fall, I generally left a suit of clothes in the branches. I should think a boy would fare about the same now. But that probably is the Paradise of the Baldwin apple.

I am much pleased with the paper, and with the remarks of our friend here, who has had such an extensive acquaintance with the apple. Of course, there was a little mischief grew out of the apple when Eve gave it to Adam to eat; but Solomon said "Comfort me with apples," and certainly I am very much comforted with this kind of fruit.

Mr. Janney—In behalf of the apple, let me refute the charge he brought against it. I think it was not an apple that Eve ate.

Mr. Parsons—I will not object where there is such a small minority.

President—"Apple Scions: or Ohio's First Nursery," by W. S. Devol is next on the programme.

APPLE SCIONS; OR OHIO'S FIRST NURSERY.

Mr. President, Ladies and Gentlemen:—There is a strange sort of fascination in the study of the beginnings of things. The genesis of various industries has engaged the thoughtful attention of the best of minds in all countries. Of a similar kind but less in degree, perhaps, is the interest surrounding the beginning in any locality or state of a pursuit which later becomes an important factor

in the sum of occupations and associations which represent the prosperity and happiness of the inhabitants of the locality.

It is with the hope of adding a little to the available accounts of the beginning in our great State of Ohio of a pursuit which now engages the attention of, or effects in some way, as producer or as consumer, every citizen within its borders, and for the promotion of which this Society exists, that I have chosen to present this paper.

We naturally turn to the first settlement at Marietta, and the stipulations under which lands were obtained by the pioneers, for the beginning and causes which prompted the course pursued in horticulture as in other callings.

It is an interesting and a pleasing fact, that along with the ordinances of the Ohio Company requiring two townships to be set aside for a university, and sections 16 and 29 of all other townships for common schools and religion, it was required of all recipients of donation lands that they set out fruit trees immediately upon settlement.

In an account of the settlement of a tract of bottom land in a bend of the Muskingum river about six miles from its mouth, it is stated that in 1795 Colonel Joseph Barker, having drawn his donation lot of 100 acres, "brought with him, in addition to his cooking utensils, farming tools and provisions, fifty young apple and a dozen cherry trees." Having, with several companions, spent about three weeks in removing the "primeval forests," during which time some two acres were cleared, the first work upon the prepared land was to set out his orchard. The faithful watch-dog, however, exhibited signs of uneasiness, and suspecting that Indians were about, Colonel Barker and his friends only remained long enough to set out the apple trees, when they departed in a canoe for Marietta.

These were not the first fruit trees planted in Ohio, as those who had settled prior to this time were also required to set fruit trees; but I give this as an example of the manner in which Ohio's first orchards were planted, and because it is in the same neighborhood in which, about ten years later, Ohio's first nursery was begun. What may have been the varieties of apples originally set out in this region I have been unable to learn, but infer from the subsequent history of fruit in this neighborhood, that they were not carefully selected, or merely seedlings or "naturalings," as the settlers styled them, and that the original settlers, most of them, cared less for the fruit than for the fulfilling of the conditions of settlement. But they were not all thus indifferent as to the quality of the fruit at their

new homes, and to one man, more than all the rest, is due the improvement of apples in the new settlement. This was Israel Putnam, grandson of General Israel Putnam, the revolutionary hero, and, counting from the present generation, great-grandfather of the writer. He was born at Pomfret, Conn., in the memorable year 1776, and when a young man of 18, made his first visit to Marietta, his father and uncle having come to this place with the first settlers in 1788.

The following is an extract from his journal, now in possession of his son, L. J. P. Putnam, of Marietta:

"BROOKLYN, March 31, 1794.

"I, with my cousin, Benj. Dana, took our leave of my and my father's family, and set out to visit the much-talked of and famed Ohio." Following this he gives a detailed account of their journey until they arrived, on May 2, at Belpre, about twelve miles below Marietta, on the Ohio river, where his father and brother had settled. In his journal for the next day is the following:

"Saturday, 3rd—Pleasant day; walked about my brother's lots; engrafted a few trees with scions I brought on."

This is the first account of engrafting, and done by a young man 18 years of age, and was probably the first time the art of was practiced in the Northwest territory.

Returning to his home in the East he sent in the following year a large collection of scions, the names of the varieties of which have been preserved, as shown by the following statement:

"MARIETTA, O., June 29, 1846.

"A catalogue of the names of apple scions received by the subscriber, of Israel Putnam, A. D. 1796:

1. Putnam Russet.
2. Seek-no-further.
3. Early Chandler.
4. Late Chandler.
5. Gilly Flower.
6. Pound Royal.
7. Naturalings.
8. Rhode Island Greening.
9. Yellow Greening.
10. Golden Pippin.
11. Long Island Pippin.
12. Tallman Sweeting.
13. Streaked Sweeting.
14. Honey Sweeting.
15. Kent Pippin.
16. Cooper Apple.
17. Streaked Gillyflower.
18. Black Gillyflower.
19. Beauty.

20. Queening.
21. Englin's Pearmain.
22. Green Pippin.
23. Spitzenberg.

WILLIAM R. PUTNAM."

Thus early in the settlement of our State we find an excellent selection of twenty-three varieties of apples introduced, having been carried from New England packed in beeswax in saddlebags, and distributed by William Rufus Putnam, to whom they were consigned by Israel Putnam. The variety called Putnam Russet is the same as that known in other localities as Roxbury Russet; but in southeastern Ohio it is known almost exclusively by the former name. The Beauty is probably the same as Prolific Beauty.

A few years subsequent to this, Israel Putnam came to Ohio to remain, and settled on the banks of the Muskingum river, about five and one-half miles from Marietta, in the neighborhood of the home of Colonel Barker; but during the winter of 1803-4 he, in company with Hon. Paul Fearing, again visited the Eastern States and brought back more apple scions.

It was not until several years after all this had been done in fruit culture that any attempt was made to establish a nursery. But the same energetic, progressive Israel Putnam was also pioneer in this. In 1818 he established a nursery on his farm, close by the river bank, procuring the scions, as heretofore, from New England. Why they should go East for scions is not apparent. For Mr. Putnam must have had extensive bearing orchards several years before this time. His son Lewis says that he very well remembers his father taking him to the top of his new house in 1812 to see the trees of the younger of his two orchards heavily laden and breaking with fruit. Probably he had been operating his nursery for some years prior to this from grafts obtained in the settlement, or, it may be, from the East. His son thinks he certainly began as early as 1800. The records of sales at an early date bear conclusive evidence of a thriving orchard; for in Mr. Putnam's day-book for 1810 and 1811 are found numerous entries of sales of apples and cider. The following taken from two days' entries of sales in mid winter will serve to show that he had an abundance of fruit:

- "1811. Jacob Miller, Bell Prie [Belpre] Dr.
Jan. 2d. To sixteen bushels apples @
37½c per bushel..... \$6 00
lent him six barrels, he returned them.
2d. Johnathan Sprague, Dr.
To one bbl. cider, with bbl... \$3 00

- 3d. John Gates, Dr.
To six barrels apples
@ \$1.00 per bbl..... \$6 00
To one barrel cider..... 2 00
Also to ten galls. keg
cider @ 66c..... 6 60
—\$14 60"

The list of varieties in Mr. Putnam's nursery embraced about the same as those sent in 1794, with a few additional. This indicates either that the list of varieties available in New England at that time was limited to those named, or that those first brought to Ohio proved so satisfactory in this climate that they did not think it worth their while to try others.

The following is taken from the record for 1818 of grafting in the above nursery:

- "Row 1, Russet.
" 2, English Pearmain [to stake], Gillyflower.
" 3, Muskingum I, Cooper I, Gillyflower.
" 4, Early Chandler I, Golden Pippin.
" 5, Green Pippin I, Golden Pippin.
" 6, Greening.
" 7, Russet.
" 8, Long Island Pippin.
" 9, Queening I, Sweet Russett.
" 10, Seek-no-further.
" 11, Russet.
" 12, Greening I, west end a variety to end.
" 13, Russet.
" 14, Golden Greening.
" 15, Russet.
" 16, Russet Sweeting I, Summer Sweet I, Sweeting.
" 17, Greening.
" 18, Pound Pippin I, Colvert Sweeting I, Bellflower I, Rocking Hand I, Detroit Early I, Cathead (winter) I, Early Chandler.
" 19, Seek-no-further.
" 20, 21, Muskingum.
" 22, Rhode Island Greening.
" 23, 24, 25, 26, 27, Putnam Russett.
" 28, Early Chandler.
" 29, Seek-no-further.
" 30, Ladies' Thigh (or Pearmain).
" 31, Long Island Greening.
" 32, Belle Bonne."

It thus appears that there were thirty-two rows in the nursery, and ten, or nearly one-third were grafted with the Russett.

The labels were lost from several of the packages of scions, and Mr. Putnam was unable to replace them. One of these was probably used in the row of Greenings (12) and recorded simply "Variety." For another Mr.

Fearing suggested the name of "Large, fair, red and good," probably from his knowledge of the fruit. But Mr. Putnam rejected this and named it "Muskingum," as recorded for rows 20 and 21 in his nursery. A tree of this variety, perhaps one of the first engrafted, is still standing upon my father's farm, about two miles from where the nursery stood. This I believe to have been the first nursery west of the Alleghany mountains, and from it most of the orchards of Washington and some of the surrounding counties were set until a comparatively recent date. And as a result of this nursery all that part of the country is well supplied with orchards containing a number of very good varieties of apples.

It was in this nursery that the Rome Beauty apple originated. The history of this apple, as given me by my grandmother, is this: Mr. Putnam had built, what was at that time very rare, a large brick house further from the bank than the first house. In the old log house upon the river bank a Mr. Joel Gillet had been living, but moved to Rome township, Lawrence county, taking with him a number of engrafted apple trees, for which he paid twenty-five cents apiece. Mr. Putnam presented him with a number of seedlings from the nursery row. One of these—or rather, a strong sprout from a seedling which had been engrafted with a Russett scion, but which was afterwards cut off and treated as an original seedling—proved such an excellent apple that he named it, and scions were sold all over southern Ohio. The first part of the name, Rome, was given from the township in which he lived, and its second part from its resemblance to the Prolific Beauty, a much smaller but very prolific apple. The original tree was still standing in Rome township a few years since, but whether it has recently been destroyed I do not know.

The Muskingum river did not wait until the forests were removed from the surrounding hills before it overflowed its banks as shown by the following incident, told me by my grandmother. When she was a girl of perhaps fifteen summers she found in her father's nursery a note addressed to a girl who was staying with Mr. Putnam's family, by a boy in the neighborhood. My grandmother promised to return it to the rightful owner on condition that she would read its contents to her, which she agreed to do, and read as follows: "I am sorry to hear that the ice has done so much damage to Mr. Putnam's nursery by the water falling after the ice had frozen over the tops of the young trees, and breaking them down." Concerning the water, my grandmother continued: "There had been a flood

and it turned cold and froze ice over all the water that had overflowed the land. I remember when we left the house the man would push the skiff on the ice, then go to the end and break it down." Although the trees were injured greatly by the water and ice, the nursery was not discontinued at this time, but supplied trees for many orchards thereafter. I have recently heard that peaches, cherries, pears and quinces were grown in this nursery.

Mr. Poste—The history of the Rome Beauty as given by Mr. Devol is correct. In 1852, Mr. M. B. Bateham took me, in company with himself, starting out to hunt varieties. We obtained the Grimes' Golden Pippin from the original tree, and we obtained the Rome Beauty in Rome township, Lawrence county. About ten years ago, the original tree was standing there. It had always been very difficult to find an apple that would ship south and keep. It proved that the Rome Beauty was the favorite for this purpose. There was an old raftsmen in early days of the name of Adam Welldom, who probably introduced the Rome Beauty into the Southern States. It is an apple which has a smooth shining skin, and if gathered early enough, will keep in good condition for several months, which, of course, is desirable for shippers.

Mr. Devol—I well remember when thousands of barrels of the Rome Beauty apples were shipped south in flat boats, as Mr. Post says. I received a letter from my mother a few days since, in which she stated that a gentleman had just gone south from Marietta with a boat load of produce, comprising two thousand barrels of apples and potatoes. Undoubtedly a large part of the apples were Rome Beauties.

President—Any other member desire to speak upon the paper that has just been read? If not, we will proceed to the next. "Preserving and Marketing Apples," by Professor William R. Lazenby. Is he present or has he sent his paper?

Secretary—He said this morning that he expected to be here.

President—Then we will proceed to the next. "Apple Blossoms: or Apple Songs and Stories," by Dr. Townshend, who I see is present.

APPLE BLOSSOMS; OR THE APPLE IN SONG AND STORY.

Subjects may be studied by themselves, and as they are known here, and to-day; or they may be viewed in their relations to other things and times. Thus we may study the

apple, its form, size, color, taste, varieties, culture, uses, and value; or we may strive to learn what was said or written or sung about the apple in other times and by other peoples. To me has been assigned the apple as it appears in story and song.

The lump which every man carries in front of his throat, and which is called the *Pomum Adami* or Adam's Apple, is believed by some to have stuck there ever since man realized the consequences of following a bad example. Looking at this prominence in the light of anatomy, we find that what some regarded as proof conclusive of the misconduct of our ancestor is simply the larynx, and consists of cartilages, to the interior of which are attached the vocal chords from which come the varied tones of the voice, and all the delights of speech and song.

Certain golden apples are said to have been presented by Rhea or Earth as her choicest gift to Hera or Juno, on the occasion of the latter's marriage to Zeus. Hera was so pleased with the beautiful gift that she directed their cultivation in the gardens of the Hesperides, and as it was understood that whoever ate of these apples would become immortal, she appointed a serpent to guard the tree and its fruit. Notwithstanding this precaution, Hercules is reputed to have obtained some of the apples, and the achievement was regarded as one of his twelve great labors. Whatever may have been symbolized by the tree with its apples and guardian serpent, the myth appears among many peoples.

The story of *Atalanta* shows how that beautiful lady might have won a famous race had she not stopped to pick up the golden apples which her competitor and suitor had purposely dropped in her path. She may have been among the first, but assuredly she was not the last one, whose heavenly course has been arrested by temptations on the way.

At the marriage of Peleus and Thetis many of the gods and goddesses are said to have been invited, but to which Eris received no invitation, and of course became very angry. To avenge herself she threw into the midst of the festive assembly a golden apple bearing this inscription, "Let the fairest take me." This, as Eris intended, broke up the party, for it is said that every lady felt herself entitled to the prize. Juno, Minerva and Venus each claimed it, and at once engaged in a contest for its possession. An appeal was made to Jupiter, but he was too smart to be caught in an attempt to decide such a delicate question; he therefore prudently directed Mercury to escort the

claimants to Mt. Ida, and have the matter referred to the famous shepherd Paris, son of Priam, king of Troy. The three goddesses appeared before Paris, but like Ohio politicians of the present time, they based their hopes of a favorable verdict upon what they had to offer, rather than upon their individual merits. Juno is said to have promised boundless dominion, Minerva all sorts of intellectual accomplishments, while Aphrodite, or Venus, offered to Paris the most beautiful woman in the world for his wife. As might have been expected Paris gave the apple to Aphrodite, and this decision is what is known as the "Judgment of Paris." Well, what came of it? The most beautiful woman known at that time was Helen, wife of Menelaus, king of Sparta. By the aid of Aphrodite, Paris stole her from her husband and fled with her to Troy. Menelaus naturally wanted to punish the thief, and succeeded in enlisting all the Grecian states in his enterprise. After a siege of ten years Troy was taken and burned. So from that apple of discord grew the Trojan war, and afterwards Homer's *Iliad* and *Odyssey*.

The Apples of Sodom are sometimes referred to as proof that "things are not always what they seem." Bitter disappointments are therefore represented as

"Dead sea fruits that tempt the eye,
But turn to ashes on the lips."

While none doubt the reality and frequency of disappointments, some have doubted whether there are such apples. It is true, however, that the *Solanum Sodomeum*, which is a kind of egg plant, bears large and handsome fruit, but a species of *Cynips* attacks and punctures the rind, after which the interior of the fruit decays, and is converted into a substance like ashes, while the outside remains fair and beautiful. These grow upon the shores of the Dead Sea, and are looked upon by the superstitious as evidence of the Divine displeasure with the old cities which occupied the neighboring plains.

Milton refers to these apples of Sodom. Speaking of the fallen angels, he says:

"Greedy they plucked
The fruitage fair to sight like that which grew
Near the bituminous lake where Sodom flamed.
This more delusive, not the touch but taste
Deceived, they fondly thinking to allay
Their appetites with gust—instead of fruit
Chewed bitter ashes."

Some one may be inclined to ask if these fruits were egg plants, why they called them apples? To this it may be replied, that our own word apple primarily signified a fruit in general; and hence, besides the common ap-

ple we have, custard apples, love apples, apples of Sodom, and several other fruits called by this common name.

In Scandinavian mythology Iduna is represented as the Goddess of Youth. She was guardian of the apples of immortality, the juice of which gave to the Gods perpetual youth, health and beauty. Her home was in the Blessed Isles.

"Where falls not hail, nor rain, nor any snow,
Nor ever wind blows loudly, but lies
Deep meadowed happy, fair with orchard lawns.
And bowery hollows crowned with summer sea."

The story of William Tell shooting the apple from the head of his little son, which is so dear to the patriotic Swiss, must not be forgotten; although the similarity of this to other legends of older date, almost compels us to consign it to the domain of the mythical. Even in modern times the apple mingles with the superstitions of the people; in Burns' poem of Halloween, reference is made to the Scotch custom of eating an apple before a looking glass, in expectation that the face of the future spouse would be seen looking over the shoulder.

Among the descendants of the New England Puritans the practice is still seen of throwing an apple peeling over the head in confident expectation that as it falls it will form the first letter of the name which young people are so anxious to learn.

The cultivated apple is understood to be an improvement upon, or development of the wild crab, which grows in almost all countries, but especially in Western Europe. Pliny, Columella, and other old writers treat of the varieties and culture of the apple as though marked improvement had been made before their day.

The crab blossoms, as well as those of the apple, are fertilized through the agency of the wind as well as by the agency of insects, and hence innumerable varieties have originated independently of human art.

It is, however, worthy of remark that any improvement from the crab to the apple form appears to be attended with a corresponding loss in the beauty and fragrance of the blossom, so that utility is gained only at the expense of beauty and fragrance. If the flower of the crab had been developed to the same extent as the fruit, what could have been more beautiful? The *Pirus spectabilis* or Chinese Crab has an abundance of pink, or sometimes of nearly white blossoms. *Pirus floribunda*, *P. alba*, and also *P. Sinensis*, or Japanese Crab are very beautiful, and for ornament, richly worthy of culture.

President—Ladies and gentlemen, you have heard the paper just read by Dr. Townshend. Any remarks by the members.

Mr. Post—Mr. President, I may say that I have been intensely interested. I think that for an erudite sketch that is very hard to beat. I am very glad to feel that it will be published so that others may enjoy it.

Mr. Green—I suggest that we talk something about varieties. We will not have Col. Innis' paper on that to-day.

President—The subject is before the Society, and Mr. Green, will you introduce the discussion?

Mr. Green—I hardly feel qualified to talk on the subject, as I am not familiar enough with the varieties suited to this section. Many of the varieties that thrive further north do not do well here. In the north the Baldwin, Greening and Northern Spy are very popular, but here they partially, or wholly fail. The following are good varieties, and according to what I have seen and heard, are among the most reliable for this locality: Early Harvest, Red Astrachan, Duchess of Oldenberg, Gravenstein, Jeffries, Twenty Ounce, Maiden's Blush, Rome Beauty, Grimes' Golden, Ben Davis, Wine Sap, Smith's Cider, and Roxbury Russett. Many other good sorts could be named; but Mr. Post is doubtless much more competent than I to give a list of varieties suited to this section.

Mr. Post—The subject is so immense that I hardly like to tackle it, and opinions are so different. The fact of the matter is, that even on adjoining farms there is such a difference in soil and the lay of the ground that the same apple which will succeed with one will not with the other. Of course, there are some kinds of apples with which we can say we have a better chance than others. The great value of the Red Astrachan is this: it has abundant, large foliage, which is the great lack of all our fruit trees. Every time you hear a great man talk, it is "foliage, foliage." Well, it is not exaggeration. The first exclamation of an Englishman when he comes to this country is, "Why! your naked trees!" With the winds that we get, it is impossible to keep the foliage on. Foliage is a good thing. The Duchess of Oldenberg and the Red Astrachan both have foliage which assists in maturing fine specimens of the apple and retaining the vigor of the tree. There is a little apple that is not often grown, called the Sops of Wine. It is an apple about like the Carolina June. This is one of our finest eating apples. The Benoni is another very fine one. But to go into any extensive description of varieties would be too long.

I have taken a ground which I find is not

popular. In it I find that I am opposed by nearly everyone in every meeting that I go to, but I can't help it; and it is this: For the varieties which we are to look, we must not depend upon the crabs. It is all rubbish. If we have got any crab that they grow in Russia, what does it all amount to? In selecting a variety for an orchard, which I believe is the heading of the paper, all that I can say is, consult your neighbors for those varieties which do well in your section and that are there relied upon. Grow old varieties which have been on trial for the last sixty years, instead of going and trying new varieties just simply because they come from a colder climate. Now, while the Red Astrachan is one of our greatest bearers when cultivated in this degree of latitude, it cannot be grown farther south than Louisville. I believe that for those varieties which we are to find profitable we should rely more upon those seedlings which are grown in our immediate neighborhood. The Red Astrachan and Duchess of Oldenberg are late keeping winter varieties in Russia where they come from. They grow there in a particular soil, and in a climate where the thermometer sometimes sinks to 40 degrees below zero. All of my trees were seriously affected at 32 degrees below zero. As I said before, the Red Astrachan and Duchess of Oldenberg are late keeping winter varieties in Russia. Bring them here, and they are amongst our earliest apples. The same thing goes on in our own continent with the Northern Spy. As you go westward and push toward the Pacific coast, the season of this variety grows earlier. Mr. Leo Weltz, as we all know, was sent out by our American Horticultural Society with more than ordinary advantages. He could speak two or three languages, and had had in his youth considerable experience. But what did he come back with? Rubbish, the merest rubbish. I saw him soon after he came home, and he told me, "I had rather take a whipping than appear before that Society with my fruits." He brought back some of these very varieties which we have been growing here, but when we saw what they were in their own native place, we were all satisfied that we did not want them. I believe that it will be found, as it is in many other branches of plant and animal life, that when we get the true apple to suit our locality, it will be native in that locality. All my experience, at any rate, goes that way.

Mr. Parsons—I want to ask a few questions. I would like to ask if anyone has had experience in gathering winter apples earlier for keeping than we ordinarily gather them? If we let them remain on the tree too

late, we lose something of their keeping qualities. My experience is this, that those varieties of apples that under ordinary treatment will last into Holidays, if gathered at an earlier stage of ripening and put in a cool place and given proper ventilation, will last until April or May. Take, for instance, Grimes' Golden. I think it one of the best apples that I have. By gathering it early, it will remain good until the latter part of May or June; but if allowed to remain on the trees till we ordinarily gather them, they will scarcely remain good beyond Holidays. There is one feature in this question of varieties in which I agree most emphatically with the remarks our friend has just made; and that is, that it is better for us to cling to a good variety than to miss getting a good apple by going after something that is far fetched. I have tried several established varieties. About Worthington—I suppose you know where that is, "the center of the world"—we have a ridge of land that I think is specially adapted for the production of fine apples, and our trees are hardy, while twenty or thirty feet lower, off this ridge the peach trees hardly live to be fifteen years old, and every light frost is sure to kill the blossoms or the green fruit. But in our high, dry air, we escape this. One thing I intended to mention in its place. We heard something of the history of the apple in Ohio. Some of you, no doubt, in reading the history of Ohio, have read of Johnny Appleseed. I preached several years in Logan county; and most of the orchards that are there are the fruit of that eccentric religious character, who brought his apple seeds in bags and planted them about in little nurseries and allowed people to take what they would. And so he went backward and forward from Virginia and New York State and brought his bags of seeds. I think he ought to be mentioned with respect and reverence.

Mr. Post—I would say that in the neighborhood of Defiance there are still standing ten or twelve rows of twenty-five or thirty trees planted by him. All of them are most beautiful specimens of fine, healthy trees.

Mr. Devol—I would like to ask if it was not from Pennsylvania that he got most of his seeds?

Mr. Post—I think he did, from Washington, Pennsylvania, not far from where the Mormon people are said to have started.

Mr. Devol—There are a number of orchards standing in Richland county and some near Zanesville that were of the planting of Johnny Appleseed. He was Swedenborgian, in religion, I believe, or something of

that kind; but I don't know but there are several denominations that have laid some claim to him. He was a "humane society" in himself. He would never allow an animal to be mistreated, if he could help it; and many times during his wanderings he bought up old horses and cared for them, or left them with people to be cared for until their natural death, leaving money with them to pay for their care. He also was instrumental in furthering the intellectual lives of the people, as well as providing for their palates. He used to distribute literature to the people throughout the State; and if he found his volumes giving out, he would cut them in two and deliver them piece by piece to the inhabitants, and then in his next trip, he would move them on to the next. So that besides the good he did in distributing fruit in the early part of this century, he also did something in providing literature, such as was a very rare treat for most of the people.

Mr. Janney—My conviction is that this is a bad neighborhood for apples. Whether it is the soil, or climate, or what, I don't know. We know there are localities that are noted for their production of good apples. One further suggestion of the gentleman from Worthington is true, that apple trees, or any other fruit or berry, escapes frost more frequently if planted upon a northern exposure than upon any other, for the reason that frost only occurs in a still atmosphere, and there is almost always a slight movement of the atmosphere from the north, so that on a northern exposure, the frost is kept off by the movement of the atmosphere. In the neighborhood of Coddington they have very fine apples, you will find. Joseph Morris started a nursery about four miles northeast of that place, and he has supplied that whole neighborhood with very good fruit. He was an old man when I first knew him in 1832; so that his nursery must have been begun very early. It would go back to about 1820.

President—Dr. Townshend has had some experience in early grafting in Ohio. We should be glad to hear from him on this subject.

Dr. Townshend—I am not sure that I have anything to communicate in regard to grafting. I shall be very glad to ask a question. I should like to know whether the Red Canada succeeds in this part of the State. Where I have lived on the Lake shore, I should not hesitate to say that it was a great deal our best apple. It will fetch considerable more in market than the Baldwin. The Baldwin is the market apple in Cleveland. I once asked the advice of a prominent dealer in apples in Cleveland as to what varieties to plant. He

said, "If you were raising apples to bring to market, you would want nine hundred and ninety-nine Baldwin's out of a thousand." But the Baldwin does not sell for more than three-fourths what the Red Canada does. So far as grafting is concerned, a good many years ago, the people from two or three farms on the Western Reserve were in the habit of making up a little party. They would select scions and go about the State grafting. This was fifty or fifty-five years ago. I remember that about that time, one of these little parties came to my father's. We had a little orchard, mostly natural fruit. He engaged these people to put in a small number of grafts. He took me from my work and told me to help them. I thought it was rather losing time, but he told me to run about amongst them and see how they did it. I suppose he trusted to a boy's inquisitiveness for that. I ran here and there for them and helped them all I could, and of course I saw how they did it. I saw what branches they selected, how they sawed them, how they trimmed them, how they split them, how many buds they took, and then how the wax was put on. When they were gone, my father asked me if I had learned to graft. I told him that I thought I had. He told me where we had better put in some more grafts. I went right at it, and from that time I became the established grafter of the township. I never received money for my grafting, but often exchanged work in that way. In riding through that part of the country now, people frequently, as I pass along, will put apples in my hands or put them in my buggy, from orchards of my own grafting. I thus enjoy the results of it now.

Mr. Post—Dr. Townshend was asking in regard to the Red Canada. That and the Hubbardson's Nonesuch are two very distinct varieties. As to the Red Canada doing well here, I have on my premises two trees. I have never been able to grow anything like the fine fruit that is grown throughout the north. I know the apple very well. I never have seen any grown in Franklin county that approaches in beauty and size those we see from the north. On the other hand, the Hubbardson's Nonesuch excels the Baldwin a good deal, and is a fine keeper.

Member—I think I noticed in the last report of the Michigan Horticultural Society that they are looking about for a substitute for the Red Canada, which is their chief market apple. It is failing very much, and will be completely destroyed. In regard to the Russet, I have a number of trees twenty-five years old. They are apparently the most healthy trees of the orchard. The apples

rot on the tree, however. I was speaking with General Hurst, who is a great apple man, and he says it has the same failing with him, and it is turning out to be almost a failure.

President—What is your pleasure in relation to the paper that Col. Innis was to have read? What shall we do in that matter? Shall we postpone it till the next regular meeting? I am under the impression that we had better continue the subject.

Mr. Post—I do not know of anything that can be more important than the subject of "the Apple," and I move that the subject of the Apple in its various phases be continued for our next regular meeting.

This motion was put to vote and unanimously carried.

Secretary—At the last meeting I reported the topics for our annual meeting, but I would again like to call the attention of the Society to the business that will be before them at that meeting. I had this program for the annual meeting printed on the program for to-day in order that it might be before the members. I will read the program now:

"The Annual Meeting of the Society will occur on Saturday December 4, at 2:30 P. M. The chairmen of the Standing Committees will submit their annual reports, as follows: 'Botany,' by Dr. N. S. Townsend; 'Entomology,' by Prof. Wm. R. Lazenby; 'Meteorology,' by W. S. Devol; 'Fruits,' by W. J. Green; 'Plants and Flowers,' by J. R. Helenthal; 'Vegetables,' by H. M. Innis; 'Synonyms,' by W. J. Green. The Treasurer will submit his annual report. The Secretary will report upon the Society's progress during the year. The election of officers for the ensuing year will follow."

I might state that I have under way the reports for the year, all of which have been printed up to date. I hope to have them bound and ready for distribution so that the members will receive them by Christmas. The election of officers will take place at the next meeting—it will therefore be a very important meeting. I hope that the members will not think it a dry meeting and fail to attend.

While I am up, I wish to present the following bills against the Society:

1886. To DEWITT C. JONES, P. M., Dr.
Oct. 20, To postage..... \$2 00

To GAZETTE PRINTING HOUSE, Dr.
Sept. 8, To Printing Proceedings,
August meeting..... \$8 00

Sept. 18, To Printing 150 copies of
Announcement—Sept..... 1 50

Oct. 1, To Printing 350 copies Pro-
ceedings, Sept. meeting.... 14 25

Oct. 7, To Printing 150 copies of
Announcement—Oct..... 1 50
Nov. 1, To Printing 350 copies Pro-
ceedings, October meeting. 17 50
Nov. 18, To Printing 150 copies of
Announcement—Nov..... 1 50
Nov. 18, To Printing 210 copies Pro-
ceedings, Dec.—April..... 18 75
\$62 50

To EMMA OVIATT, Dr.,

Nov. 27, To Reporting Oct. meet'g.. \$5 00

To W. S. DEVOL, Dr.

Nov. 27, To Services as Secretary, 9
meetings, at \$1.50.....\$13 50

Upon motion, the bills were ordered paid.

Mr. Green—I wish to propose the following amendments to the Constitution of the Society:

SEC. 4. To be so amended as to read:
"Any person may become a life member of the Society upon payment of ten (10) dollars, which shall be in lieu of all assessments or annual dues; and all persons who have been members for twenty or more years, and have paid their regular dues, shall be life members."

SEC. 8. To be so amended as to read:
"The Secretary shall keep a record of the proceedings of the Society, and attend to all necessary correspondence. He shall also receive all monies due the Society for membership, annual fees, and assessments, and pay over the same to the Treasurer; and shall receive as remuneration for his services the sum of fifty (50) dollars per year."

The work of the Secretary is quite laborious, to make of it what it ought to be. It takes several days for every session. I cannot say how many, but I know the time required here is not a quarter of the whole time required. I know Mr. Devol has spent a great deal more time than he could afford to spend. We want this work done, and we want it done right. It is to the interest of the Society to have an active Secretary and pay him so that he can at least feel that he is partly paid for his services. In regard to the other amendment, we have reduced the initiation fee, and of course we ought to reduce the life membership fee.

President—These amendments will have to lie over until our next meeting.

Mr. Sinks—This Society owns a carpet, and a committee, of which I am a member, was appointed to sell it. I have used all my powers to do so, and have signally failed. I have offered it as low as ten dollars. It cost us about forty; and as this is the season of gifts, I suggest that we donate it to one of

the best charities of the city, the Home of the Friendless. I understand that they are in need of a carpet.

Secretary—If Mr. Sinks made that in the form of a motion, I heartily second it.

Mr. Sinks—I will make it a motion.

The motion was put to vote and unanimously carried.

President—Will Mr. Sinks see to the execution of that matter?

Secretary—Mr. President, there is another topic that I think might be brought up at

this point, that is the attendance of the members at the annual meeting of the State Society at Dayton, which occurs the 15th, 16th and 17th of December. Shall we send some from here as authorized delegates?

President—Let that be brought up at our meeting next week.

The Society then adjourned to meet on the 4th of December, at 2:30 P. M.

W. S. DEVOL, *Secretary*.

J. M. WESTWATER, *President*.



Columbus Horticultural Society.

BOARD OF TRADE ROOM, }
COLUMBUS, O., Dec. 4, 1886. }

The Society was called to order at 3 P. M., by President Westwater.

The minutes of the preceding meeting being in the hands of the printer, their reading was dispensed with.

President—Unfinished business is next in order.

Mr. Secretary, is there any upon the table? I should think that the amendments to the Constitution might properly be considered here.

Mr. Aldrich—I would suggest that we defer that until later in the session, perhaps until we come to miscellaneous business, when we will probably have a better attendance, and the mover of the amendments will be here.

President—Very well; if there is no objection, we will pass to the next, and call this up later.

Election of members is next. Has any one any names to propose for membership? If not, I will call for reports of Special Committees.

Mr. Devol—The Committee on Programme reports that the programme for next meeting has not yet been completed, but will be made out and published in time for the next meeting.

President—Reports of Standing Committees is next on the programme; 1st, On Botany, by Dr. N. S. Townshend.

Dr. Townshend—I have not been able to find the time necessary to prepare a suitable report.

President—It will be in order to give Dr. Townshend time in which to prepare his report, and present it to the Secretary for publication. If there is no objection, the Doctor will please do so.

REPORT ON BOTANY.

The more thickly settled our State becomes, and the more it is denuded of its forests, and the consequent alteration in climate and environment, the more does our flora come to resemble that of the older eastern States and Europe. The changed condition of affairs makes it an uncongenial dwelling place for the more modest and retiring native plants, and a better home for the aggressive plants on cultivated field and meadow.

We find, therefore, that new plants are appearing each year, and, as might naturally be expected, the new-comers are generally more or less weedy in their nature. Occasionally a species comes from the west, as did the bearded or prairie plantain a few years since; but the great majority are brought from the east and the Old World with importations of seeds, plants, packing materials, and such.

There are found within the State of Ohio about 1,600 species of flowering plants, of which about 230, or about one-seventh, are called weedy plants, and the proportion is increasing all the time.

These weedy plants have been placed in three classes: I. Plants that are universally troublesome weeds. II. Plants that are usually troublesome. III. Plants occasionally troublesome.

There are some 62 species included in the first class, 52, or 87 per cent. of which are introduced species. Of the second class, 30 of the 55 species, or 55 per cent, are introduced. But of the third class, only about 26 per cent. are foreigners.

It is unfortunate that so little attention is paid to the characteristics of plants, that a better knowledge of the new-comers might be obtained without waiting until they become so thoroughly established that their eradication is next to impossible. This alone, ought to be sufficient reason for the study of economic botany by agriculturists and horticulturists.

Every new plant, however inoffensive in appearance, observed by any member ought to be brought to a meeting of this Society, and an effort made to determine what may be expected from it.

Respectfully submitted, upon request of the Chairman of the Committee, by
W. S. DEVOL.

The 2d is On Entomology, by Prof. William R. Lazenby.

REPORT ON ENTOMOLOGY.

The Chairman of the Committee on Entomology is obliged to state that he has no special report to offer. His work during the past year has been in another direction, and he has thought it best not to avail himself of the labors of others, believing that these reports should exhibit original observation and experience.

It is unnecessary to urge the importance of a careful and thorough study of our more common insects—friends as well as enemies; and it should be the ambition and purpose of the Standing Committee on Entomology to prepare each year a report of equal interest and value.

Although the Chairman of the Committee has nothing to present, he is glad to state that another member of the Society has prepared an excellent report, one worthy of careful examination.

Special attention is therefore called to the following report by Mr. W. B. Alwood:

ADDITIONAL REPORT ON ENTOMOLOGY.

Mr. President, and Members of the Columbus Horticultural Society:

Not having had in contemplation the writing of this report, I perhaps have omitted many matters of interest which might have been embodied in it. However, it has been a pleasant task for me to prepare the following paper in accord with the request of Prof. Lazenby, chairman of this committee:

The year has not been marked by any extraordinary outbreak of insect enemies, yet our little foes have kept the battle in array against us, and I must admit in several places have advanced somewhat their picket lines, if they have not gained a decided advantage.

The first noticed in the spring, which is probably worthy of attention, was the four striped plant bug (*Poecilocapsus 4. vittatus*) on the currant and gooseberry bushes. This is one of the true bugs, order Homoptera. They are sometimes mistaken for beetles, but an examination of the wing covers will at once reveal a marked difference. Those of the bugs being shorter than beetles, and in almost all cases softer in texture.

This bug is possibly .2 of an inch long and .15 of an inch wide. Its body is a bright red, and its wing covers yellow, with four black bars running lengthwise of them, hence its specific name. Like all bugs, it has no biting jaws, but a proboscis, by which it extracts the juices of plants on which it feeds. This is an important matter, economically considered, as it renders their destruction by poisons applied to the food plant impossible; any treatment to be effective must be made to the insect itself, which is very difficult to do, because they are so quick in their movements and take shelter under leaves, etc., at first alarm.

These bugs attacked the currants and gooseberries at the University garden in great numbers, and did considerable damage.

Their attack lasted about twenty days, beginning with the 10th of May, and being

about over by June 1st. This order has no true larval period in the common acceptance of the term, as the young, when hatched, resemble the parent except in size and development of wings. They feed alike in all stages of growth.

They disappeared very suddenly, and no later brood appeared. I am not able to account for their sudden appearance in such numbers, as I had not noticed them before.

The damage done was very considerable, almost entirely destroying the tender shoots from which they sucked the juice. No remedies were tried for want of time, and I cannot recommend any, never having had experience with this insect.

It has not commonly been a destructive insect, and has never been figured in any work on Entomology, so Prof. Riley informs me. By reason of this unusual attack of this insect it is all the more important that it should be mentioned here.

As being of some importance, I will mention the *Proteoteras asculana*. I do not know of any common name for this insect, except we should call it the maple twig borer.

In the spring, after the maples were out in full leaf, I noticed many of the young branches were dying. On examination, there was found feeding in the pith of each injured twig a small white worm. The parent insect lays the egg upon the stem just at the base of the petiole of a leaf, and the larvæ when hatched makes its way into the stem, eating down several inches, causing the death of the branch, sometimes from one to two feet. I know very little of this insect, as it has not been treated of in any of the current works on Entomology, and perhaps has been mentioned but twice in print, and then in periodicals which I had not at hand when writing this report. Its attack can be readily recognized from what I have said of it, and the only remedy which would likely meet the case would be to prune and burn all affected twigs before the larvæ has escaped. Should it become numerous enough, it would play sad havoc with the maple shade trees.

The currant saw fly (*Nematus ventricosus*) is an enemy of much importance and really demands from the members of this Society and all others interested in horticulture, steady and unremitting attention. It breeds rapidly and spreads over the bushes, literally denuding them of foliage almost before you are aware. For the past four years we have made a steady fight on them at the University garden, and have succeeded in reducing them somewhat; but they are by no means exterminated. The only practical remedy we have used is powdered white hellebore, ap-

plied with a bellows. This should be done in the morning when the bushes are damp, and by all means should be attended to while the larvæ are young, as it is very much more effective then. The hellebore is not a poison in the sense of poisoning the food, but by being breathed through the trachea its irritant properties produce death.

I want to say a word about powder bellows, as good tools are of great importance in this work as well as any other. I have never seen a good bellows offered for sale in this city. Most of them are small, poor things, and a decided nuisance to the gardener.

The only good bellows I know of is the Woodason large, double cone bellows. This implement holds considerable material, works easily and produces a perfect blast of very fine powder. It is also very economical in the use of powder.

Later in the summer came the well-known cabbage worm (*Pieris rapæ*), and along with it came another cabbage worm not so well known (*Plusia brassica*). The first named is the well-known European cabbage worm, with which you are all doubtless familiar. The perfect insect being the most familiar butterfly seen in the garden during the late summer and early fall. The *Plusia brassica* has not, so far as I am able to learn, been common in this section heretofore, at least not lately. The perfect insect is a moth and seldom or never seen except by those who observe closely. It flies in the dusk of evening and during the night. The larvæ are quite different from those of the rape butterfly, being longer and marked with longitudinal stripes of a light color, the ground color of the worm being green. It also tapers decidedly toward the anterior segments and has but eight pro-legs instead of ten. This gives it the peculiar mode of locomotion common to the measuring worms. The rape or European worm was very destructive during the latter part of July and fore part of August, after which it almost disappeared from the field owing to the attacks of two parasites of which I shall speak more in detail further on. The *Plusia brassica*, for which I know no common name, unless we should call it the cabbage measuring worm, appeared about the first of August in insignificant numbers, and for some time I was at a loss to identify the new comer, and from my first observations thought it would not prove destructive. In this, however, I reasoned without due consideration, for about the middle of September they appeared in immense numbers, and from that time up till frost put an end to them, which was not until in November, they carried everything by storm. Cab-

bage heads were riddled to the core as though they had been cannonaded with buckshot. It was nothing unusual to find fifty worms on one head. The female moths seem to be very prolific, for I could count frequently from twelve to twenty eggs on a single leaf. They feed irregularly, cutting great holes in the leaf and when numerous, give the head a singular perforated appearance. The full grown larvæ are a little larger than the rape worm.

Many remedies were used on these two cabbage worms. So many different experiments were tried that I will not attempt to speak of them singly, but will merely outline them, with some of the practical results. The remedies tested were alum water in different strengths, tansy water, tomato water, benzine, coal oil emulsions in various strengths, Hammond's slugshot, Dreer's Insect Terror, cayenne pepper, some half dozen remedies imported from England, several preparations of tobacco soap and pyrethrum. None of the remedies proved to be of any value except the tobacco soaps and pyrethrum. My experiments showed that tobacco soaps prepared with potash were quite efficient, but I am quite certain that it was the potash and not the tobacco which constituted the destructive principle. The tobacco makes the preparation repulsive to the smell, but as I abundantly proved, is not at all poisonous. Pyrethrum is the one remedy for these worms that I would urge upon the public attention. It is perfectly safe to the user, more easy of application than any liquid preparation and in its effects on the worm more deadly than any remedy used. From many experiments I conclude that powder of good quality mixed with three times its bulk of flour or any cheap substance as a diluent will prove perfectly effective. This is also a cheap remedy, as one pound of powder, which should never cost more than fifty cents per pound, diluted as above, will cover one acre if properly handled. The bellows previously mentioned is best for its use.

The rape worms are much more easily killed than the *Plusia brassica*, and it is sometimes safe to dilute five times for the former. This all depends somewhat on size of worms. If this worm *Plusia brassica* should become numerous, in fact should multiply as persistently as the rape worm has done in former years it promises to be a serious enemy. It attacks lettuce with equal avidity as cabbage.

As before mentioned the rape worms were very efficiently destroyed this year by two parasites, viz: *Pteromalus puparum* and *Microgaster glomeratus*. I know no common name for these two little flies except the

general name of Ichneumon flies, which is applied to this whole family, the habits of which are, I think, without exception parasitic. I mention these two little friends in this connection as I think we should all know of their existence, for they promise to be of untold benefit to gardeners. The destruction of cabbage by the rape worm has been placed at many thousands of dollars annually, and these parasites are in the nature of a sign that their course as a destructive insect is finished. Exceptional injury by this cabbage worm in Europe is almost unheard of, because these parasites keep them in check.

The *Pteromalus puparum* attacks the insect just before or just after pupating, hence the specific name, puparum. The female deposits a great number of eggs beneath the skin of the worm or pupa; these hatch and complete their transformation and issue as perfect flies in about fifteen days, leaving nothing but the dry shell of the pupa. I have reared from twelve to one hundred and eleven flies from a single pupa. The latter number, however, was from a specimen in which I observed three different females ovipositing. This gives some idea of the rapidity with which these little fellows can multiply.

The *Microgaster glomeratus* attacks the worms while young, depositing as many as forty or fifty eggs, which develop in about ten days into minute little maggots possibly 1-32 of an inch long. These issue from the full-grown larvæ just before it is ready to pupate, and spin little yellow cocoons all lying together in a mass. The worm of course dies soon after they issue. The last brood of the rape worms this season were so badly infested that I could scarcely find a healthy specimen.

Yet as plentiful as the *Plusia brassicae* were, not one of them was attacked by these parasites, which make the presence of this worm at this time even more dangerous than the rape worms.

The tomatoes were vigorously attacked by several species of the larvæ of the Sphinx moths. These are large, conspicuous worms, the body being of a light green in some, to dull, heavy green in others. They are variously marked, giving to some the name of zebra caterpillar, but the whole family are marked by diagonal bars along the sides and a black horn of greater or less size rising from the posterior segments of the body.

These were also attacked by a parasite, *Microgaster congregatus*, a closely allied species to the *Microgaster* before mentioned. The grubs or larvæ of this fly issue through the skin of the worm and spin white cocoons, standing erect like so many little spinners all

over the worm. I counted 180 of these cocoons on a single tomato worm. The tomato worms can, I believe, be best destroyed by hand picking. They are perfectly harmless to handle, though I will admit it is not the most pleasant thing to do. These worms can also be destroyed with pyrethrum, but it must be used in strong mixtures or its action is very slow.

A new cut worm, which operates on the strawberry, came to my attention this year. It is a large worm, species not yet determined, if in fact it has ever been named. It works by cutting out the crown of the plant, completely ruining it. If this worm multiplies it promises to be very destructive. I could not, from my limited acquaintance with it, suggest any remedies.

The *Paira aterrima*, a very destructive little beetle, also made its appearance here this year. It works in the perfect stage on the leaves of the strawberry plant, completely riddling them with fine holes. Its larval and pupa stages are spent in the ground among the roots of the plants, where it does some little harm, but nothing to speak of compared to its work above ground. It would be a difficult matter to reach these little fellows with remedies, as they so easily hide among the foliage, except we should use some arsenical poison, and these I have never tried on strawberry vines but suppose they can be used with safety if properly diluted.

Another insect depredator on the strawberry which made its appearance this year for the first time is the beetle *Graphops pubescens*. It does its injury in the larval stage, which it spends boring irregular channels up and down the fleshy portion of the roots. The larva is a small fleshy grub about 3-32ds of an inch long, and pure white except the head, which is covered with a brown shield plate. I do not find in my books any account of this insect injuring strawberries, but it has proved quite destructive with us this year. Worst of all, it has worked on the new beds, which, so far as I have observed, most of the insects here mentioned do not do. That is, the others seem to have a preference for old, matted beds. Whether this last mentioned insect will prove destructive it is impossible to say, but they start in as though they meant business. I could suggest no remedy but to destroy the patch.

The strawberry root worm *Anarsia lineatella* was also found by me the present season infesting part of the old beds. They were not found at all among the new beds. This worm is the larvæ of a small moth and does great damage sometimes. It is about one-half an inch long, slender, and a pale

pink color. Its work is all done inside the fleshy portion of the roots. No remedy whatever can be suggested for them but to destroy the patch. If the roots are raked out and burned it is the best thing possible to do.

The Snowy tree crickets, *Oecanthus niveus*, were present among the raspberries in great numbers this season. I tried several times to trap them by poisoned food, but without favorable results. Only two males were killed.

The work of this insect is probably known to most of you; at least it is easily recognized. Their only injury is done in the attempt of the female to provide a safe place to deposit her eggs. This she does by inserting a long ovipositor into the stem of the canes obliquely and placing the eggs in the pith. They are laid in a more or less imperfect row, from eight to twenty in a row.

The only way to destroy them is to cut out and burn injured canes in the fall or early spring.

I was very much pleased to find this season the larvæ of a small parasitic fly destroying these eggs. It is, so far as I can learn, an unnamed species.

An insect but little known, and which I think has never been found in this locality before, was observed this year on a small orchard in the suburbs of this city. It is the *Aspidisca splendiforella*, or splendid shield bearer. It attacks the apple and several allied plants. The perfect insect is a small beautiful moth. Its mode of attack is curious and very interesting, also quite destructive.

The egg is deposited on the leaf, and shortly a tiny worm hatches, which makes its way into the leaf, feeding upon the fleshy portion between the upper and lower surfaces. When full grown, which is probably 3-64ths of an inch long, it begins to cut out a case for itself of the thin outer portions of the leaf. These it cuts perfectly circular, binding them together with threads of silk, reserving one small place which it does not cut off until all the rest is finished. When all is ready, it attaches a web firmly to a portion of the leaf beyond where it has cut, then severs the small portion yet uncut, and swings down on its web.

Just at this stage they are an interesting sight swinging in the air by thousands, they look almost exactly like good sized tomato seeds. The small opening left in the case is not closed. They swing in the wind until brought in contact with the trunk, a limb, or some other object, to which the little fellow immediately attaches himself. He can move along the surface of a limb or board quite freely by thrusting out his head somewhat

after the fashion of a turtle, and apparently walking upon it.

The little larvæ within is a slender pink colored worm, in no way attached to its case. They pass the winter in this case exposed on the surface of any object they come in contact with, and in the spring transform to a pupa, and later the moth issues.

Several of these tiny worms may be found in one leaf; and after they have cut out their case the tree looks as though some hot substance had fallen upon it, the drops cutting their way clear through the leaves.

As a remedy, I sprayed them with caustic soap solutions and completely used them up.

I mention last but by no means of least interest to Horticulturists the white grub, or May beetle, *Lachnosterna fusca*. The larvæ of this beetle proved themselves a terror this year in the strawberry beds, potato fields and lawns. It needs no extended notice, as I presume all are familiar with it. Its greatest injury is done in the larval state, which lasts three years, or rather, three summers and two winters, as at the close of the third summer they transform into the perfect beetle, which issues from the earth the following spring. They also do harm in the perfect state by eating the foliage of pear, apple, and other trees, but this is seldom sufficient to notice. They have been the most destructive this year I have ever known them. Their worst work is done in lawns, often ruining in a single season a fine lawn. The lawn at the University this year could in many places be rolled up like a bolt of cloth, so completely had they eaten off the roots.

I tried some methods for destroying them, but was not successful, as they would go down into the soil out of reach of treatment. However, kerosene emulsion, lime, salt or soap washes will kill them if applied so as to reach them.

Their habit of working near the surface makes them a fine prey for crows, yellow hammers, meadow larks and robins. I saw many of the last three named this year taking them out of the lawn in great numbers. In some places they would literally bore the dead sod full of holes in seeking after the grubs. This should be a caution to farmers and others not to destroy these birds.

I have recently investigated the grubs in their winter quarters, and find that they only descend about twelve inches deep at most, and the greater number lie from three to nine inches deep. From this I would suggest that late fall plowing might destroy a great many of them.

There are many other insects of which I

might speak, but the length of this paper has I fear already exceeded the limits desired.

On motion, the reports were accepted, and ordered spread upon the minutes.

Prof. Lazenby—This paper is quite interesting, as it deals with quite a number of new insects. We should learn what we can about the habits of these insects before their ravages become so great, in order that we may array ourselves against them and prevent this great loss. After they once become numerous it is much more difficult to fight them.

I wish to state, also, that Mr. Alwood is making a special study of insects, and will always be glad to hear from members about the insects that are troublesome, and will take pains to investigate any new attack or inroads that they may make upon the vegetation of the garden and orchard.

I wish to say the same in regard to plants. Any new or strange plant may be sent to the University or Experiment Station, and whether it is familiar or not, you will receive a report upon it. Especially do we desire to have all weedy plants reported. These are constantly making their appearance from foreign countries. Since the publication of Mr. Beardslee's "Catalogue of Ohio Plants," in 1877, about seventy-five species of plants have been found in Ohio, which are not in that list—many of them weedy plants. A large part of these were found in the vicinity of the nurseries of Storrs, Harrison & Co., at Painesville, by Dr. Werner, who is employed in these nurseries, and has made a special study of the flora of that locality.

These new plants were undoubtedly imported with the plants bought from foreign countries for the nursery.

Mr. Parsons—The white grub is doing immense damage to pasture, meadow and wheat in my vicinity. They seem to be general here, and in Blendon township they are even more destructive than they are here. The farmers are powerless, and are anxious to learn from others as to the probable time they are to submit to their ravages. The grass and wheat roots are entirely destroyed. So far I have not noticed them in clover sod. I have one pasture field that at least one-half the sod was loose like a blanket. There is a new worm near Dublin, and it is very destructive to the foliage of apple trees. It is two inches long and nearly as large when grown as the tobacco worm. In color it is yellow. A few days after its appearance in the orchard they devoured all the leaves on some of the smaller trees. The people became alarmed and went to work killing the destroyers, and picked them off from the young trees.

I recommended them to report the fact, if they put in an appearance in the spring, to Mr. Alwood and he would investigate and see what could be done.

Mr. Aldrich—In June last I noticed on my red raspberries a worm which was new to me. It was of a green color, from three-fourths of an inch to an inch long and about one-sixteenth of an inch in diameter. It ate holes clear through the leaves, and made a kind of a web, and fastened the leaves together so as to hide in it. I think I have read of the webs being seen on leaves which had been eaten, but that they could not find the worm. If they were numerous they would probably be quite destructive.

Mr. Poste—I want to take this occasion to say that any information that we can get on imported weeds will be thankfully received by all of us. I have been connected with the nursery business for over thirty years, and have seen the spread of a good many foreign weeds. In a trip east some time ago I was much surprised at seeing the great quantities of yarrow. From near Harrisburg to Washington the roads were lined with this weed. It seemed to take the place of everything. The Canada thistle is another. All of the thistles are bad enough, but the Canada thistle seems to be the "very old fellow himself." There is a patch in Marion township where it is spreading rapidly and threatens to overrun everything. Some say that it will not spread rapidly here. I see no reason why it should not spread as fast here, if not faster. The oxeye daisy is sometimes encouraged as a pretty flower, and is now getting to be a very great nuisance.

President—The next is on Meteorology, by W. S. Devol.

Mr. Devol—My report is like several others that I have made. Mr. E. H. Mark, who was chosen as one of my associates on the committee, agreed to prepare a report, as he has all the statistics at hand, and present it at the meeting to-day. I saw him yesterday and he said that he had it partly prepared. He may be in later with it.

President—Perhaps it would be proper to publish a report in the proceedings.

REPORT ON METEOROLOGY.

The first of the following tables exhibits the meteorological conditions at the Ohio State University for each month of the year 1886—the year beginning with November, 1885, and closing October 31st, 1886.

The other table gives a comparative summary for the four years since the establishment of the Bureau:

METEOROLOGICAL CONDITIONS AT OHIO STATE UNIVERSITY FOR 1886.

LATITUDE, 40° 0' 2". LONGITUDE, 83° 0' 39". ELEVATION, 757 FEET.

MONTHS.	BAROMETER.						Mean Relative Humidity.	TEMPERATURE.										No. of Days.				Monthly Rain-Fall.	Average Daily Rain-Fall.	Prevailing Wind.
	Mean.	Highest.	Date.	Lowest.	Date.	Range.		Mean.	Mo. Range.	Greatest Daily Range.	Date.	Least Daily Range.	Date.	Clear.	Fair.	Cloudy.	Rain-Fall.							
November.....	30.178	30.699	12	29.145	4	1.554	83.8	39.8	68.0	7	19.0	26	49.0	15.9	38.0	4	5.0	1	3	12	15	15	2.89	.096 S.W.
December.....	30.098	30.692	14	29.372	8	1.320	86.0	30.9	59.0	9	0.5	7	58.5	17.4	32.0	9	4.0	10	6	12	14	15	1.68	.084 S.W.
January.....	30.178	30.754	4	29.534	25	1.220	92.5	22.9	50.0	3	-11.5	11	67.5	15.9	35.0	14	6.0	26	1	10	20	18	4.49	1.45 S.W.
February.....	30.080	30.440	2	29.170	20	1.270	88.3	26.0	62.5	11	-12.0	17	74.5	20.7	48.0	17	5.0	7	6	14	9	8	1.67	.060 S.W.
March.....	30.080	30.999	18	29.459	6	.940	79.2	38.0	75.0	15	8.5	2	66.5	20.7	44.5	18	8.0	22	8	14	14	18	2.83	.091 S.W.
April.....	30.080	30.899	17	29.582	14	.810	78.2	63.1	86.0	12	11.0	8	75.0	27.0	41.0	23	6.0	6	11	9	10	16	3.25	.108 S.W.
May.....	29.983	30.392	17	29.582	14	.810	78.5	68.5	90.0	14	40.0	17	53.0	27.1	41.0	21	14.0	7	11	14	6	14	6.91	.223 N.W.
June.....	29.947	30.211	4	29.601	17	.610	77.4	72.8	98.0	7	51.0	23	47.0	28.4	41.0	24	11.0	15	11	10	10	13	3.01	.067 N.W.
July.....	29.969	30.256	9	29.699	80	.537	78.8	70.0	94.0	11	44.5	31	49.0	25.6	39.0	8	11.5	15	11	15	6	7	1.42	.046 S.W.
August.....	30.100	30.384	3	29.817	80	.567	75.0	65.3	93.0	9	35.5	21	57.5	25.9	43.0	22	11.5	17	11	15	4	12	3.42	1.14 S.W.
September.....	30.102	30.373	16	29.394	14	.979	78.9	49.9	83.5	12	22.5	3	61.0	30.6	44.5	3	7.0	26	17	10	4	6	1.19	.038 S.W.
October.....																								
Year.....	30.048	30.761	Feb. 4	29.145	Dec. 4	1.609	82.8	50.1	97.5	Jun 14	-12.0	Feb 17	109.5	23.5	48.0	Feb 17	4.0	Dec 10	98	146	121	153	34.99	.097 S.W.

*1—1st, 9th, 23d, 23d and 24th.

*2—16th, 19th, 22d and 23d.

*3—19th and 22d.

*4—22d and 30th.

COMPARATIVE SUMMARY FOR FOUR YEARS.

LATITUDE, 40.° 0' 2". LONGITUDE, 83° 0' 35". ELEVATION, 757 FEET.

	1883.	1884.	1885.	1886.
Mean barometer.....				
Highest ".....				80.048 inches.
Lowest ".....				80.754 "
Range of ".....				29.145 "
Mean relative temperature.....				1.609 "
Highest ".....	82.53 per cent.	83.53 per cent.	82.9 per cent.	82.8 per cent.
Lowest ".....	48.97	50.98	47.9	56.01
Range of ".....	97.90, August 26th.	97.90, August 20th.	101.00, July 21st.	97.05, June 14th.
Mean daily range of temperature.....	17.90, January 12th.	-32.00, January 28th.	-91.00, December 19th.	-15.00, February 17th.
Greatest ".....	104.00.	129.00.	123.00.	108.00.
Least ".....	21.00.	24.00.	24.00.	23.00.
Number of clear days.....	46.50, September 11th.	49.50, July 22d.	58.00, February 2d.	48.00, February 17th.
" " ".....	1.8, January 28th.	4.0, February 25th.	6.0, December 12th.	4.0, December 10th.
" " ".....	99.	110.	85.	98.
" " ".....	149.	122.	131.	146.
" " ".....	117.	124.	149.	121.
" " ".....	148.	149.	168.	153.
Total rain-fall.....	40.51 inches.	37.25 inches.	42.08 inches.	34.99 inches.
Mean daily rain-fall.....	.111	.102	.592	.097
Greatest monthly rain-fall.....	5.81 " February.	6.23 " February.	6.91 " May.	6.91 " May.
Least ".....	1.19 " November, 82.	.45 " August.	.98 " March.	1.19 " October.
Warmest day of year.....	82.57, July 23d.	80.53, July 23d.	85.98, July 31st.	81.99, July 29th.
Cooldest ".....	1.00, January 22d.	-16.53, February 6th.	-4.00, February 10th.	-6.50, January 10th.
Prevailing direction of wind.....	N. W.	N. W.	S. W.	S. W.

President—The next report is on Library, by J. J. Janney.

Mr. Janney included in his report a full list of the books in the library. As the report published in the proceedings last May, he was requested to have an abstract made which should include only such as were not in the preceding report of the Librarian. The following is the abstract prepared :

REPORT ON LIBRARY.

The undersigned, Librarian, would respectfully

REPORT: That there are now in the library the following books, not included in my last report :

- Country Gentleman, Vol. 47.
- Gardener's Magazine, Hovey, 2 Vols.
- Insects Injurious to Forest and Shade Trees, A. S. Packard.
- Insects of Missouri, C. V. Riley.
- Sea Mosses, A. B. Hervey.
- Report Department of Agriculture, Washington, D. C., for 1885.
- Report Michigan State Board of Agriculture, for 1885.
- Report U. S. Entomological Commission for 1878-9.
- Report Secretary of State, Ohio, 1881.
- Report Minnesota State Horticultural Society for 1885.
- Report Wisconsin State Horticultural Society for 1885.
- Report Ohio State Horticultural Society, 15th, 16th and 18th Sessions.
- Report Portage County Horticultural Society, 1879.
- Report Montgomery County Horticultural Society, 1883.
- Market Garden Husbandry, Wm. H. Hoblett.
- Peach Culture, J. Alex. Fulton.

In addition to the foregoing, the Society has the following in numbers, unbound :

Magazine of Horticulture, Hovey—	Vol. 24,	5 Nos.
“ “ “	Vol. 25,	9 “
“ “ “	Vol. 26,	11 “
“ “ “	Vol. 27,	9 “
Horticulturist.....	Vol. 24,	9 “
Gardener, complete, 1 Vol.		
Tilton's Journal of Horticulture.....	Vol. 6,	2 “
Department of Agriculture, Special Reports.....		17 “
Do. Miscellaneous Reports		2 “
Do. Division of Chemistry, Bulletins.....		2 “
Do. Division of Botany, Bulletins.....		1 “
Do. Divisions of Statistics.		21 “

Iowa Weather Service, 1881.		
American Garden (Odd Numbers)		12 Nos.
Vick's Illustrated Monthly Magazine		9 “
Gardeners' Monthly		9 “
Ladies' Floral Cabinet. Vols. 11, 12, 14 and 15, incomplete		32 “
Do, complete.....	Vol. 13,	12 “
Horticultural Art Journal...		5 “
Garden.....	Vols. 30 and 31.	
Gardener, 1 Vol. :		
Orchard and Garden		10 “
American Horticulturist.....	Vols. 43,	
44 and 45.....		24 “
Gardiner's Gazette		6 “
Fruit Recorder, 1 Vol.....		46 “

Many of the periodicals in this list lack but a few numbers of being complete, and these will be supplied as soon as practicable, and the volumes will then be bound. A large portion of them were not paid for by the Society, but were sent by the publishers without charge.

J. J. JANNEY,
Librarian.

President—The next report is on Fruits, by W. J. Green.

Mr. Green was not present when his report was called for, and the time being all occupied when he appeared, his report was ordered spread upon the minutes, and is as follows :

REPORT ON FRUITS.

Comparatively little fruit is grown for market near this city. The locality is not well adapted to fruit growing, although some crops are grown with moderate success, and are confined mostly to the small fruits, and of these none are planted to any extent except strawberries and raspberries. Orchards and vineyards have been planted, but only in exceptional cases have they proved to be profitable; and they have mostly perished because of the naturally untoward surroundings, or from neglect. Replanting is limited almost wholly to family orchards, and it is doubtful if enough is being done in this direction to meet future demands, hence our supply must be drawn largely from other localities. It seems to be a fact that fruit growing is becoming specialized, and it is also true that we have no specialty to boast of. We take first rank in nothing, and second rank in but few fruits. The past season was more than usually favorable, except with a few fruits, and in certain localities.

Strawberries.

The strawberry season opened unusually early, and lasted for an uncommonly short time. It is not common to see very many ripe strawberries grown in this locality before the first of June, but one or two pickings had been made in many patches near the city before that date last season. The first ripe berries were seen May 17, upon plants of Covill's Early, a new sort sent out by Matthew Crawford. This was followed closely by Crescent, May King and Wilson. The first named variety is doubtless as early as any now known to the public. It seems to possess no fault except that the berries are only medium in size; but as to firmness, color, form, and quality they are all that can be desired. A variety not yet named, from Mr. Farnsworth, is also very early, and of extra good quality. The Jewell continues to give satisfaction; the Parry seems to be somewhat variable in its growth, although the fruit for the most part is quite fine. Buchach gave some excellent fruit, while the Jessie appears to excel all of the new sorts in size, uniformity and beauty of the fruit. The Henderson and Garretson appear to be undesirable. The crop was not so good as usual, although large in the aggregate, because of the increased acreage. Owing to the very short season, and to the fact that Southern berries were abundant at the same time, the market was overstocked and much depressed. The wholesale price for good berries was below \$2.00 per bushel most of the time, while it was less than \$1.00 frequently, and many berries spoiled before they could be used. Consumers seemed to be slow to avail themselves of the low prices, appearing in many cases to believe that the bottom of the market had not been reached even when berries were selling below the cost of production. In consequence, the season closed before many of the lovers of good bargains had secured a supply.

Berry growers and dealers are accustomed to this thing, and in most seasons they laugh in their sleeves to see such economical practices bring disappointment to those who indulge in them; but last season the laugh was on both sides, if we can persuade ourselves to believe that the disappointed growers felt in that mood. They, at least, have the grim pleasure of knowing that some bargain drivers waited too long for berries to get them cheap, while the latter class could not help being assured that the berry men humbly took what was offered them or nothing, and made no effort to extort, as some have been accused of doing in former seasons. Doubtless the combined unfavorable circumstances had much

to do in causing the low prices, but the increased acreage in all parts of the State is the prime cause. The berry fields around Louisville and Cincinnati furnish the supply that comes in competition with our first berries, while those of Barnesville compete for a share of the trade the remainder of the season. If no berries whatever were grown near this city, there would be no trouble in getting a supply. Prices would rule higher and the quality lower, but we should not lack for berries. There are not enough berries produced near here, however, to supply the city, and home growers may as well have the market as those living at a distance. They can make money at the business if any one can, as they can save freight and commissions, and can put the fruit into the market in better shape.

Although the outlook is not highly encouraging, there is no reason for giving up the business. Strawberry growing is likely to be quite as profitable as any other branch of horticulture.

Grapes.

Grapes are but little grown in this section for market, the locality not being favorable to their development. The few vines that are planted yielded, in most cases, a better crop than usual. The rot was quite as troublesome as in former seasons, except in some localities, where it did much less damage than usual. The copperas remedy was tried by Mr. Aldrich, but did not prove to be entirely successful, owing to the fact that the rot appeared late, sometime after the copperas had been applied.

There can no longer be any doubt as to the efficiency of paper bags to prevent the disease. It seems, however, that the fact has been quite generally overlooked that bagging grapes causes the skin to become more tender. This was observed in quite a marked degree the past season; but most people would prefer the bagged grapes to those grown in the open air.

Doubtless the only sure method of growing grapes in this locality is to protect the vines during winter, and to bag the clusters. The necessity of the latter operation may, however, be obviated by training the vines upon buildings. In such situations grapes rot but little if any.

Gooseberries and Currants.

The crop of these fruits was smaller than usual, and comparatively few were seen in the market, although apparently enough to supply the demand, which was rather limited because of the abundance of other fruit.

Cherries.

The crop was unusually good, although no orchards of any size are growing near here. Much of the fruit found in the market was brought from a distance, and from localities where fruit growing is more generally practiced than here. Sweet cherry buds were mostly killed by the cold winter, as indeed were a large number of the trees, consequently the home crop consisted mostly of sour cherries. The Early Richmond can doubtless be grown with profit in this locality, and perhaps also some other varieties.

Peaches.

But few trees are now to be found in this section, as planting has been discontinued, and the old trees are nearly all dead. The fruit buds on those that remain were nearly all killed last winter. Many trees growing in the city escaped, however. This might be taken as a hint by residents of the city, were it not for the fact that the boys are more to be feared than frost, yellows and all other disasters and diseases combined. One must get out of and away from the city if he would reap the reward of his labor in fruit growing.

Pears.

The crop was quite as good, and perhaps better than usual, but since the trees are few, the quantity of fruit was small.

Mr. Aldrich—I was requested by Mr. Green to report upon a part of the fruits and submit the following

ADDITIONAL REPORT ON FRUITS.

Raspberries.

The black raspberries made a poor growth during the season of 1885 and came through the winter considerably impaired, especially on old plantations; but the spring was quite favorable for growth, and the middle of June it seemed as though the crop would be up to if not above the average, but as the fruit ripened it was found that the berries were not near as large as the year preceding, and the weather being exceedingly dry the crop was quite small, many of the berries not ripening but drying up on the vines.

The red varieties on my grounds were more seriously injured by the winter than by the severe weather of the preceding winter, Philadelphias and Highland Hardy being badly killed back, so that they produced only about half as many berries as they did the year before. On the other hand Cuthbert and Herstine, which were killed to the ground in the winter of 1884 and 1885, were

not entirely killed last winter and produced some very fine fruit. The Turner at the beginning of the season was very fine and the bushes were very full, but as the season advanced they were cut short by the dry weather.

The spring being quite favorable the old plantations made a very good growth, and before the drouth affected them had made canes large enough; and as the latter part of the season was dry the wood ripened up well and seems to be in good condition for winter.

Of the old varieties, for hardiness, quality and productiveness there is probably no sort which excels the Turner, but it is too soft for shipment and will hardly keep for a near market unless the weather is favorable. For home use, if one is willing to give a little protection, I know of no sort that is superior to the Herstine, the fruit being of large size, bright color, and of a very sprightly flavor, with just enough of the acid to be very agreeable. If it were a little more hardy it would be all that could be desired for the garden or the near market. I think so well of it that I am willing to cover enough vines to supply our own table, though I have about fifty other varieties on trial. Of the new varieties I have fruited but few, and those only on plants set last fall, so I can tell but little about them, before another year.

The Marlboro, which was so highly spoken of by those who had bought shares of it, will, I am afraid, not fulfil the expectations of those who hoped to find it the berry. The quality is not good, and I hear many unfavorable reports from various places. The Rancocos with me produced some fruit on small fall set plants, which, under the circumstances, was of fair quality; but this year I could on young plants see but little difference in time of ripening of the varieties claimed to be very early and those which are usually the latest.

On my grounds and in my neighborhood the Reliance makes good vigorous bushes, with large uniform berries, and is quite productive, but the fruit is not of first quality for dessert, being quite similar to the Philadelphia in taste.

Of all the red raspberries I ever tasted the Elm City is the sweetest, and the Michigan Early Red, which is of fair quality on my grounds, was the earliest to ripen. Of the new sucker varieties I believe the Golden Queen will be one of the most desirable, if it proves to be as hardy as it is claimed to be by its originators. Small plants set the first of December, 1885, made the most vigorous growth of any sucker variety on my grounds, and made more young plants than any other

kind, and they produced quite a quantity of fruit which for quality was all that could be desired, being of better flavor than the Carolina or the old Yellow Antwerp, and for a yellow variety its appearance is the finest I have ever seen. The berries, when ripe enough to ship, are firm and solid, and are of a beautiful cream color, deepening to a golden yellow when fully ripe. If it proves perfectly hardy I shall hardly feel like taking the trouble to cover the Herstine for my own use.

I can not say much as to the quality or productiveness of the new black caps, as those set last spring or the fall of 1885 produced but few berries.

From the style of growth I could not distinguish the new Springfield from the old Davidson's Thornless, nor the highly recommended Earhart from the old Ohio Everbearing. If there is any difference, it will be found in the fruit.

Young plants, though slow in starting, made a very vigorous growth on my grounds; but the soil is quite rich and they were well cultivated. I have about two hundred and fifty seedling black caps and a few red ones, of which probably one hundred will bear next year; and as I have on my grounds all the varieties which I could find in the catalogues and a number not yet introduced for sale, in all 84 varieties, I shall watch the seedlings with interest when they come into bearing. Some of the canes of the caps were affected with a disease the latter part of the summer and died nearly to the ground. I examined them rather carefully, but could see no trace of the work of any insects with the naked eye.

I found the Hilborn the worst of any of the blacks, and Florence and Beebe's Golden of the yellow varieties.

Blackberries.

Blackberries stood the winter well, blossomed full, and the wild ones produced considerable fruit; but the crop was cut short by the drouth. There are scarcely any cultivated in the north part of the county. My Lawton and Kittatiny, which are young, gave us some nice berries long after the wild ones were gone.

My other varieties have not been set long enough to enable me to form any idea of their merits. The Early King, which is offered at five dollars per dozen, bore a little fruit about the size of the Snyder. And the Bonanza and Nevada also had a few berries, as well as the Dorchester, Warren and Duncan Falls. The Wilson Junior made a slender, trailing growth which could be easily protected, and rooted freely from the tips, as

did Newman's Thornless and Stayman's Early. This last variety does not sucker.

The Lucretia Dewbuy, so highly spoken of in all parts of the country, bore a few berries on plants set from tips in November, 1885. They were of good size and good quality, and I shall set out enough of them in the spring to supply my family, as they can be protected so easily if necessary, and come so early. I had them ripe this year before the late strawberries were gone. On the 9th of July we had on our table Mt. Vernon strawberries, black and red raspberries, blackberries and Early Harvest apples, all ripe at once. As I have all the blackberries I could hear of, in all 42 varieties, I hope to be able in a year or two to give a full report on them.

Apples.

The apple crop of this year was probably fully an average one in this region, and fall apples were a drug in the market, hardly worth enough to pay for picking up and marketing. And the dry and hot weather of the summer and fall ripened up the winter apples so that they fell before the time of picking, so that very few remained on the trees at that time, and apples which are usually unfit to eat before the latter part of winter are now soft and ripe.

On motion, Mr. Aldrich's report was accepted, and ordered spread upon the minutes.

Mr. Poste—I rise as one of the delinquent members. But I wish to state that much of the success of this Society depends upon a few of the members. I have not been here enough to see all those who have been of most value, but know who a part of them are. I am afraid to undertake to name them lest I should not name all the right ones. But to some is due, for their services, the special thanks of the Society. As I just said, I am afraid to begin to name them. But Dr. Townshend is always here, ready to take his part. Prof. Lazenby is always ready to help. And that report just read by Mr. Aldrich, is a valuable one. It is just such reports as this that we need. I engage to say that not anywhere, not in the State of Ohio, has so good a report been made for the first year. If such reports are printed and placed where they will be available to amateurs or professional growers, they cannot help doing good to the cause of horticulture. It represents careful, conscientious work, such as few are fitted or situated to do. I could have reported on a few of the varieties named, but could not have given so complete or good a report. My business requires so much of my time that I cannot make these careful observations.

President—The next is the report on Plants

and Flowers, by J. R. Hellenenthal, who has not attended a meeting since he was elected, and is not here. Have you any communication from him, Mr. Secretary?

Secretary—No, sir; I have received no word whatever from him, although I wrote him to the effect that a report would be expected from him.

President—Seventh, on Vegetables, H. M. Innis, who is chairman of this committee, has never attended the meetings or furnished a report.

Eighth, on Synonyms, there is no report.

The next in order is the annual report of the Treasurer.

Secretary—I have here the report of the Treasurer, which he sent, with a note stating that he would not be able to attend until late, and requested me to present it before the Society. [See page 17.]

President—You have heard the report; What is your pleasure concerning it?

Mr. Alwood—Is it not customary to have the Treasurer's report audited by a committee?

President—I do not recall what has been the practice of the Society. What do the minutes show, Mr. Secretary?

Secretary—A committee has been appointed to audit the accounts, I believe.

Mr. Alwood—I move you that a committee of three be appointed to audit the reports of the Treasurer and Secretary.

Upon receiving a second, the motion was put and carried; and Messrs W. B. Alwood, J. J. Janney and W. S. DevoI were appointed by the chair to act as said committee.

President—Report of the Secretary on the Progress of the Society during the year, is next in order.

REPORT OF THE SECRETARY.

Mr. President:—I wish to submit the following short summary of the work of the year closing with this meeting:

The Society has held regular meetings in every month of the year, an Annual Meeting in December, and a special Strawberry Meeting in June, making fourteen meetings in all.

Owing to sickness and press of other duties during the early part of the year, I was unable to properly attend to my duties as Secretary, and preparations for the meetings of the Society were not always as complete as was desirable. But since May, when the publication of the proceedings of each meeting in full was begun, we have not failed in having an interesting and valuable programme presented at each meeting. Up to this meeting we have had presented to the Society fourteen reports of special committees, thir-

teen reports of standing committees, and twenty-seven papers and addresses, which, with the discussions, cover about seventy-two pages of printed matter, all but about ten pages of which has been presented since the April meeting. Sixteen new members have been taken into the Society, and the names of forty have been stricken from the roll for non-payment of dues. There are now upon the roll the names of forty-seven annual members, twelve life members, and twelve honorary members. The sum of \$59.50 has been received for membership and annual fees, and the same has been paid into the treasury.

The Society is in a more prosperous condition than it has been for many years. Still it has not the activity nor membership that it should have, and the meetings could be made more interesting and instructive than they now are, if all members would promptly perform whatever duties the Society asks of them.

I think it would be well during the coming year to make many of our meetings "special meetings," i. e., confine the papers and addresses to the discussion of some one subject, as during the past year. Opportunity should be given, however, to discuss the numerous topics not important enough to demand a special meeting.

The reports of standing committees are always interesting, and should be submitted more frequently. Certainly few months pass during which time something does not transpire that might enter into the reports of the respective committees. It would be an advantage to hold several meetings at residences of some of the members. Our meetings here, however, are much more pleasant than they were while held in the Pioneer Block.

Mr. Poste—I am glad to hear this report of the Secretary, and don't think it has been at all overdrawn—

President—Not a bit.

Mr. Poste—And I think the Society in better condition than it has ever been. I am glad it has been so successful during the year, and hope it may continue to improve. It is doing good.

President—If there is no objection, the report will be placed upon the records of proceedings.

The next is miscellaneous business. Under this we will take first the amendments to the Constitution, and then proceed to the election of officers for the ensuing year, that the election may take place under whatever changes may be made in the Constitution, and the new officers know whether there is to

be any benefit derived therefrom. Mr. Secretary, you may read the proposed amendments.

Secretary—The following are the amendments proposed by Mr. Green, and submitted at the last meeting of the Society:

"Sec. 4. To be so amended as to read:

'Any person may become a life member of the Society upon payment of ten (10) dollars, which shall be in lieu of all assessments or annual dues; and all persons who have been members for twenty or more years, and have paid their regular dues, shall be life members.'

"Sec. 8. To be so amended as to read:

'The Secretary shall keep a record of the proceedings of the Society, and attend to all necessary correspondence. He shall also receive all moneys due the Society for membership, annual fees and assessments, and pay over the same to the Treasurer; and shall receive as remuneration for his services the sum of fifty (50) dollars per year.'

The proposed amendment to Sec. 4 was then re-read by the Secretary and placed before the Society for discussion and action.

Mr. Aldrich—Upon becoming a member of this Society I noticed that in the new Constitution the membership and annual fees had been reduced, while the life membership remained the same as it was originally. Furthermore, a twenty years' membership at the present rate of annual fees amounts to but ten dollars. The life membership fee ought, therefore, to be reduced to the sum proposed in the amendment. I think, Mr. President, that the amendment ought to be adopted.

Mr. Poste—How does the section read as it now stands in the Constitution?

President—It is as follows:

"Sec. 4. Any person may become a life member of the Society by paying twenty dollars, which shall be in lieu of all assessments or annual dues; and all persons who have been members for twenty years or more, who have paid, or shall pay, their regular dues, shall be life members."

Mr. Aldrich—I would like to suggest that this might be amended so as to permit any one who has been a member for several years, to become a life member on payment of ten dollars, less the amount he has already paid in memberships and annual fees.

Mr. Poste—That is reducing it to a very low figure indeed. It would permit one who has been a member four or five years to become a life member on paying a very small sum in addition, and we might thus some day find that we were without revenue from this source.

Mr. Aldrich—I merely made this a sug-

gestion. Perhaps the interest on the ten dollars if received in advance, would be sufficient cause for not making the change suggested.

President—The only change that the amendment will make will be to reduce the fee for life membership from twenty to ten dollars.

Secretary—The words "or shall pay," as in the Constitution near the end of the section, are omitted in the amendment. They appear to be superfluous, as any member not paying his dues is dropped from the roll of members.

President—Are there any further remarks?

Member—I move the adoption of the amendment as read.

This received a second, and the question being called, was put, and the amendment adopted as read without a dissenting voice.

President—The Secretary will read the second proposed amendment.

The section was read as above by the Secretary, and declared open for discussion.

Mr. Aldrich—I believe that no one can spend the time necessary to make of this Society what it should be, and lies largely in the power of the Secretary to make it, for the small remuneration we now give. It is quite a task to properly attend to the duties, and we ought, if the state of the treasury will allow, to offer sufficient remuneration that we may require the Secretary to perform his proper duties. The sum is none too large for the amount of labor necessary.

I would state further, that I think the Secretary can do most of the work now performed by the Reporter. He can certainly take our ordinary discussions, and if we will take pains to present in writing all of our longer productions, the important points can be secured. From my experience during the past year, I think it vastly better to have all the papers and addresses written out. For many of the things that appeared in print as mine, I was ashamed of. Whether I said them or the fault was the reporter's I am unable to say; but if it is written down, it will certainly appear as read. If we should dispense with the Reporter we would thus save to the Society more than enough to pay the Secretary the amount proposed.

A member—What does the Secretary now receive?

Another member—How does the section read as it now stands?

Secretary—The section reads as follows:

"Sec. 8. The Secretary shall keep a record of the proceedings of the Society, and attend to all necessary correspondence. He shall also receive all money due the Society, and pay over the same to the Treasurer; and shall receive as remuneration for his services

the sum of one dollar and fifty cents for each and every meeting at which he may serve."

The amendment changes the wording a little in the first part of the section, and the salary of the Secretary from one dollar and a half per meeting to fifty dollars per year.

Mr. Aldrich—I think the compensation of the officers of the Society ought to be more in the control of the Society, so that if it saw fit it could change it from time to time, as occasion seemed to require. It might be so amended as to place the compensation upon motion of the Society from time to time.

Prof. Lazenby—I don't think the question of how much we shall pay our officers belongs in the Constitution at all. The Constitution stands for the object and general principles of the Society. We have by-laws which are not so fixed, and by which the details should be governed, and it is in the by-laws that this question of compensation should be placed. It would then be less trouble to fix the amount as the case from time to time might require.

President—This matter was arranged as it is for the purpose of preventing the squandering of the Society's funds. It was placed so by Mr. Deshler, if I remember correctly. At least one week should be given before any proposed appropriation of the Society's funds could be effected, otherwise, a meeting might be arranged by the officers or a few members at any time, and appropriate all the Society's funds for salaries. It was thought best to make the funds secure, and for that purpose this was kept in the Constitution.

Mr. Poste—I think our Constitution should not be amended so easily. It should be kept intact, unless due notice is given before each proposed amendment is acted upon. I move the adoption of the proposed amendment as read.

Upon receiving a second, the question was put and carried.

President—Is there any further business?

Secretary—I have here a letter from President Ohmer, of the State Horticultural Society, from which I wish to read the following extract:

"The meeting of the State Horticultural Society will be in this city, commencing on Wednesday, the 15th of next month, at which meeting I hope to see you, and as many of the members of your Society as can conveniently come."

I have also before me the programme for this meeting, which, no doubt, all of you have received. I think some action should be taken as to the delegates from our Society. I therefore move you that all who may attend the State Society meeting be authorized to act as delegates for this Society.

The motion received a second, and was carried.

Secretary—I have another letter which I wish to read:

COLUMBUS, O., Dec. 4, 1886.

MR. WESTWATER, *Pres.*—Will you please convey to the Society the thanks of the ladies of the Home of the Friendless for the donation of the carpet, which was very much needed, and very welcome. Regret the Associated Charities will keep you from the meeting. Respectfully,

MRS. R. D. HARRISON,
Pres. Home of the Friendless.

On motion the letter was ordered spread upon the minutes.

President—We will now proceed to the election of officers. I wish to state that I am not a candidate for re-election. I thank the Society for the kindness and assistance it has always given me. I have an affection that will probably become worse, so as to make my attempts to conduct the meeting disagreeable as you have just seen by my coughing. I shall always be glad to co-operate with the members of the Society in furthering its well-fare, and shall be no less interested than now. I have held the office long enough, and think there should be a change. I think Mr. Aldrich is the man for the place.

Mr. Aldrich—I don't think a change is at all necessary. Nor is it customary. The American Pomological Society has had but one president, and the State Society keeps its presidents until they die. I hope, therefore, that Mr. Westwater may be induced to accept the nomination.

Mr. Poste—I wish to nominate Mr. Westwater. He is, undoubtedly, the *right man in the right place*. [Applause.] He is acquainted with the affairs of the Society. He is well acquainted in the city and with the officers of other societies, and should be re-elected.

Mr. Aldrich—I move that the Secretary be instructed to cast a unanimous ballot for Mr. Westwater.

Mr. Poste seconded the motion in a lengthy address.

President—I declare the motion out of order, as there is more than one nominee. I will appoint Mr. Janney as teller.

Mr. J. M. Westwater received a majority of the votes cast, and on motion of Mr. Aldrich, put by the Secretary, the election of Mr. Westwater was made unanimous.

Mr. O. W. Aldrich was nominated for re-election as Vice President, and as there was but one nominee, on motion of Mr. Poste, he was unanimously elected.

Mr. W. S. Devol was nominated by Prof.

Lazenby for Secretary and re-elected without opposition.

Mr. Janney nominated Mr. Geo. W. Sinks for Treasurer, who was unanimously re-elected.

The present executive committee, consisting of G. S. Innis, Wm. R. Lazenby, and W. J. Green, were re-elected, *viva voce*.

Mr. Aldrich—I move you that Mr. Devol be elected a special committee of one to prepare programmes for the ensuing year.

The motion carried.

Mr. Aldrich—I wish to announce that I have chosen for associates on the Committee on Fruits Mr. Green and Mr. Poste, and wish to ask if they will serve.

Messrs. Green and Poste signified their willingness to serve.

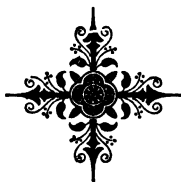
Secretary—As this has been an interesting meeting aside from the election of officers, and the meeting of the State Society occurs the middle of the month, and as the date for the regular December meeting falls on Christmas day, I move that the regular December meeting be dispensed with, and that the next meeting be held on the last Saturday in January.

Mr. Poste seconded the motion, and being put, it prevailed.

There being no further business, on motion of Mr. Janney the Society adjourned.

W. S. DEVOL, *Secretary*.

J. M. WESTWATER, *President*.



TREASURER'S REPORT.

GEORGE W. SINKS, TREASURER, DR.

IN ACCOUNT WITH

THE COLUMBUS HORTICULTURAL SOCIETY, CR.

CREDIT.		
1885.		
May 1.	Balance.....	\$188 48
28.	Dues received.....	4 00
Aug. 6.	Int. on Cols. & Toledo Ry. bonds...	175 00
Sep. 10.	Membership fees	2 00
30.	Int. on Turnpike bonds.....	15 00
Nov. 14.	Dues received.....	1 00
Dec. 21.	Membership fees.....	\$2 00
21.	Sale of hod, shovel, tongs and poker.....	2 50— 4 50
1886.		
Feb. 1.	Int. on Cols. & Tol. Ry. bonds.....	175 00
Mar. 4.	Int. on Turnpike bonds.....	15 00
Aug. 9.	Int. on Cols. & Tol. Ry. bonds.....	175 00
Sep. 16.	Int. on Turnpike bonds.....	15 00
Nov. 29.	Dues and fees received from W. S. Devol, Secretary.....	59 50
Total.....		\$829 48

DISBURSEMENTS.		
1885.		
May 14.	Paid A. G. Byers for file case.....	\$17 00
June 29.	" Ohio State Journal, bill.....	9 00
July 7.	" for periodicals and postals.....	18 27
14.	" for postals.....	1 65
Aug. 18.	" rent to August 1.....	25 00
Oct. 14.	" premiums awarded Aug. 29, '85	15 00
Nov. 4.	" rent to 1st inst.....	25 00
10.	" bill sundries, J. J. Janney.....	4 83
10.	" Ohio State Journal.....	7 70
11.	" Annual dues Board of Trade...	25 00
14.	" premiums awarded September	28 25
Dec. 5.	" Ohio State Journal Co.....	2 50
12.	" " " ".....	3 00
15.	" J. M. Westwater sundry bills for expense of banquet.....	236 49
16.	" Thos. Byers, janitor, balance.	8 25
21.	" J. J. Janney, Secretary...\$6 00	
21.	" stamps, envel. & postals... 4 35—	10 35
1886.		
Feb. 16.	" rent to 1st inst.....	25 00
Mar. 1.	" Ohio State Journal Co.....	6 00
9.	" Gazette Printing House	8 00
29.	" Ohio State Journal Co.....	2 00
30.	" Siebert & Lilley.....	9 90
Apr. 27.	" " " ".....	19 60
May 3.	" rent to 1st inst.....	25 00
June 1.	" Gazette Printing House.....	6 50
July 2.	" Emma Oviatt.....	8 00
31.	" Gazette Printing House.....	29 75
Aug. 10.	" rent to 1st inst.....	25 00
11.	" bill G. H. & J. H. Hale...\$3 00	
11.	" bill of Mel. Crawford.....12 70—	15 70
Sep. 23.	" Gazette Printing House.....	17 25
Nov. 1.	" rent to 1st inst.....	25 00
4.	" dues Board of Trade.....	11 80
27.	" Miss Oviatt \$3 and \$5.....	8 00
29.	" Mrs. C. Lofland.....\$4 19	
"	" W. S. Devol, Sec..... 7 50	
"	" " " ".....13 50	
"	" Sub. to Orchard & Garden	50
"	" postage, sundry items.....13 00	
"	" Siebert & Lilley..... 20—	38 89
"	" Gazette Printing House.....	62 50
Dec. 4.	" Miss Oviatt.....	5 00
	Balance.....	43 80
		\$829 48

1886.		
Dec. 4.	To balance.....	\$43 80

INVESTMENTS.		
Columbus & Toledo Railway first mort-		
gage 7 per cent. bonds.....	\$5,000 00	
Franklin County Turnpike 6 per cent bonds	500 00	
Total.....	\$5,500 00	

Respectfully submitted,
G. W. SINKS, Treasurer.

(3)

